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Number 5.

MAY, 1902.

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and Industrial Record.

This Number Contains the Papers Read at the Annual Meeting of New England Cotton Manufacturers

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CLASSIFIED INDEX FOR BUYERS, - Page 969

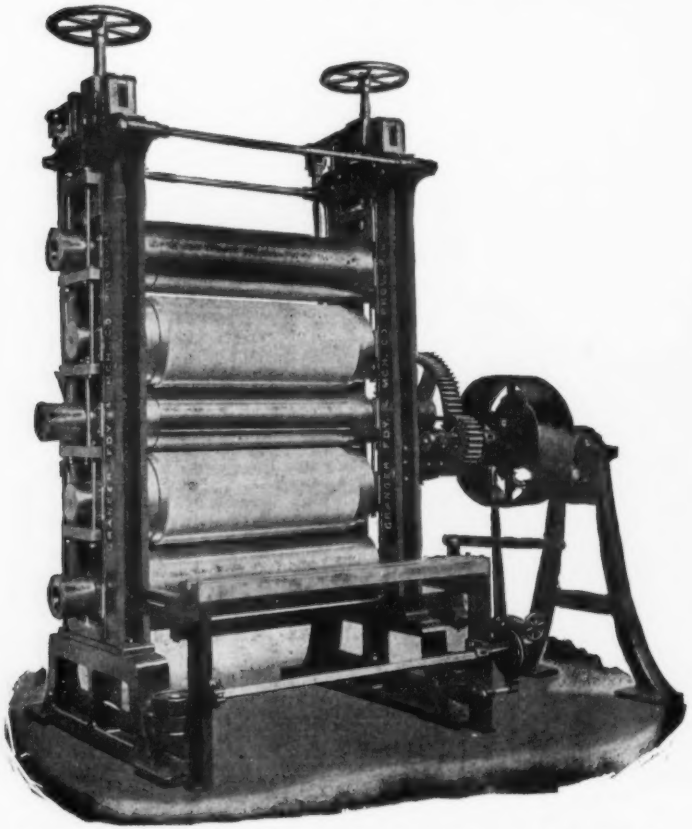
GUILD & LORD,
PUBLISHERS.

95 SOUTH STREET,
BOSTON, MASS.

Special Cotton Number.

Bleaching, Dyeing, Drying,

And Finishing Machinery.



CALENDERS, MANGLES AND ROLLS.

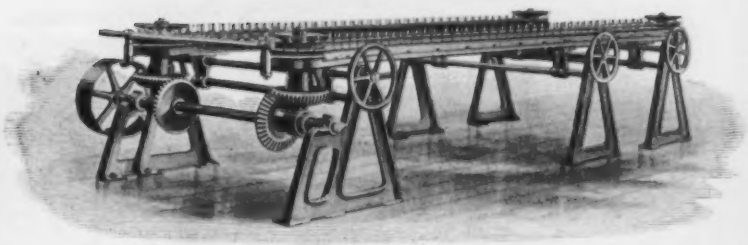
TENTERING MACHINES,
MERCERIZING MACHINES.

Granger Foundry and Machine Co.

PROVIDENCE, R. I.

Bleaching, Printing, Dyeing and Finishing Machinery

For Textile Fabrics.



STRAIGHT TENTERING MACHINE, WITH AUTOMATIC CLAMP. (Patented.)

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VIBRATORY (or Swiss) **MOTION FOR LAWNS, ETC.**

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HOT AIR (2 or 4 returns) **FOR GINGHAMS, ETC.**

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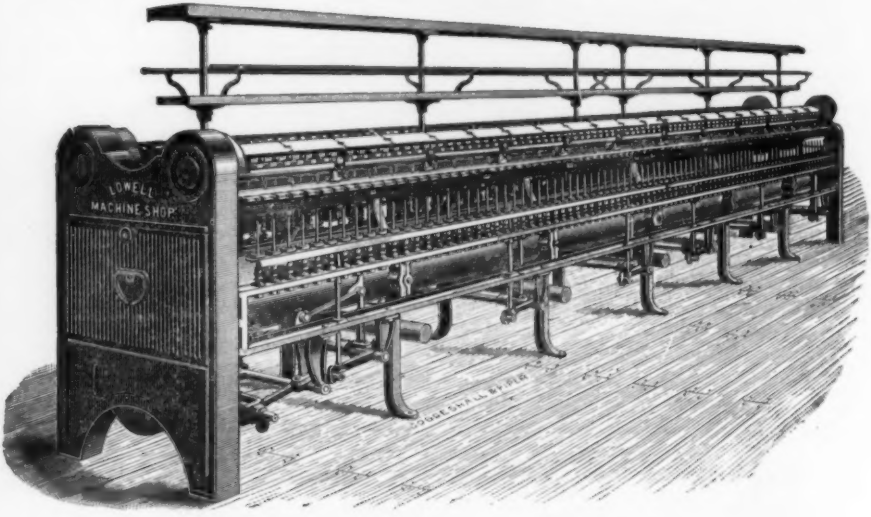
LOWELL MACHINE SHOP,

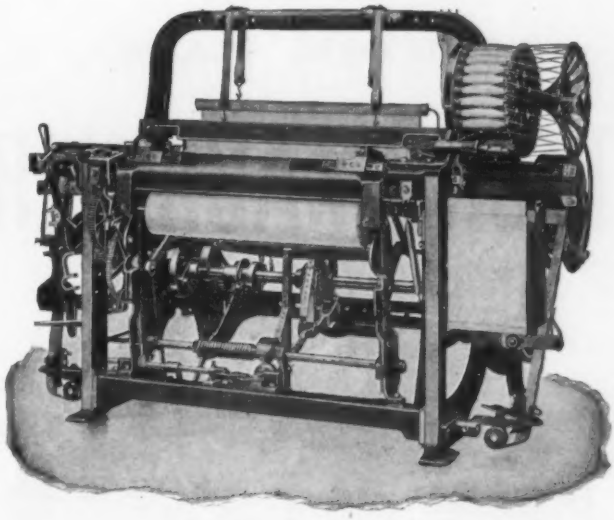
Lowell, Mass.,

COTTON MACHINERY.



Revolving Flat Cards,
Railway Heads,
Drawing Frames,
Roving Frames,
Ring Spinning Frames,
Twisters, Spoolers,
Warpers, Slashers,
Looms.

WORSTED MACHINERY.



OUR LATEST

NORTHROP LOOM

Although our order list lengthens and strengthens, we do not adopt the simple and inexpensive plan of building without change, but continually add improvements whenever possible. A careful study of the above illustration will prove of interest to adepts in the Art of Weaving.

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MASON MACHINE WORKS,

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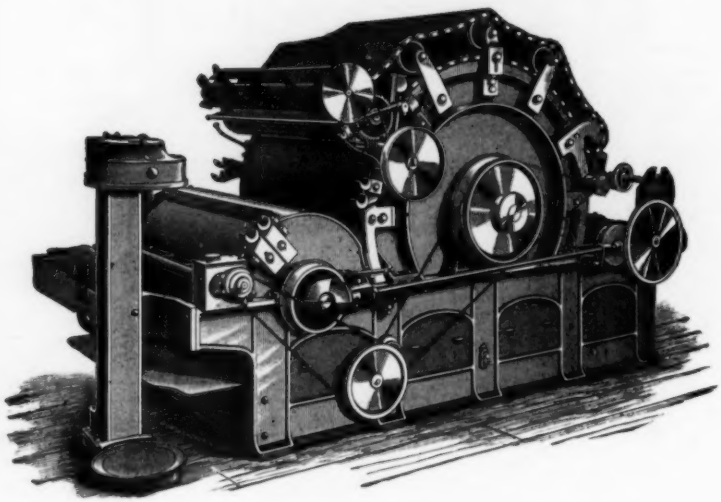
COTTON MACHINERY



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Mason-Northrop Loom.

Southern Office, Charlotte, N. C.

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AMERICAN MACHINE COMPANY,

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COTTON MACHINERY.

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FEEDERS
SELF-FEEDING OPENERS
BREAKER LAPPERS
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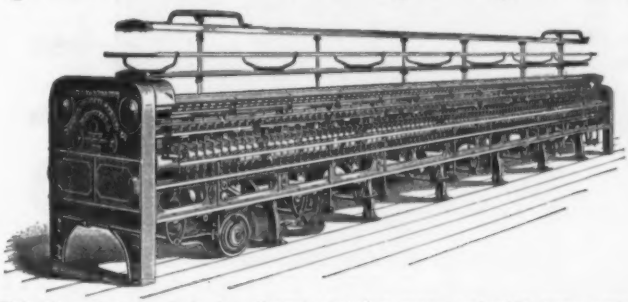
REVOLVING FLAT CARDS
DRAWING FRAMES With Mechanical or Electric Stop-Motion.
SLUBBING FRAMES
INTERMEDIATE FRAMES
ROVING FRAMES

Improved New Pattern Spinning Frames.



This New Pattern Spinning Frame contains many valuable improvements which will certainly interest you and pay you to investigate. All parts are specially designed and so constructed as to obtain the highest speed and greatest production.

We Invite Investigation and Comparison.

THE WHITIN MACHINE WORKS,

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Revolving Flat Carding Engines.

Sliver Lap Machines.

Ribbon Lap Machines.

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Twisters.

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In the Cotton Field nothing equals the
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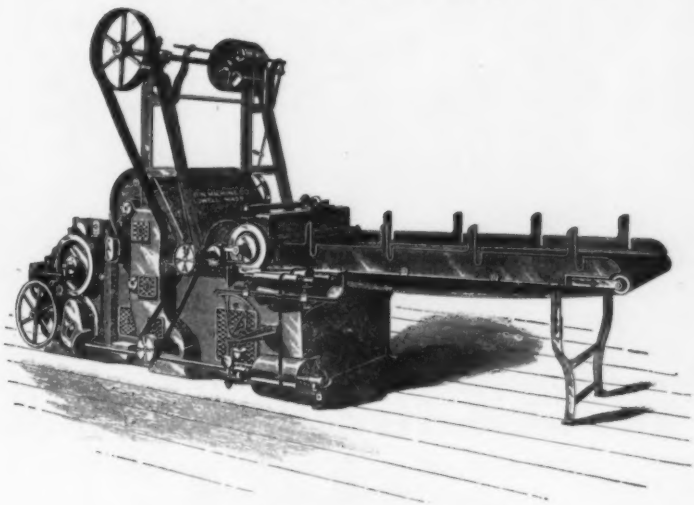

In the Cotton Mill nothing equals the
KITSON COTTON PICKERS.

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Largest Builders of Cotton Openers and Lappers in the World.

STUART W. CRAMER, Southern Agt., Charlotte, N. C. and Equitable Building, Atlanta, Ga.

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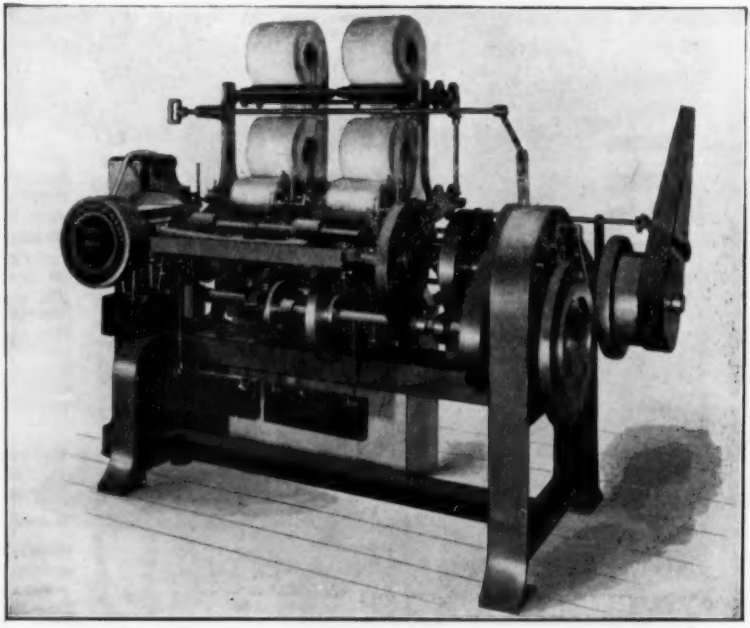

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Is the latest and best in the way of simplicity, larger product, better work.

BUILDERS OF ALL KINDS OF

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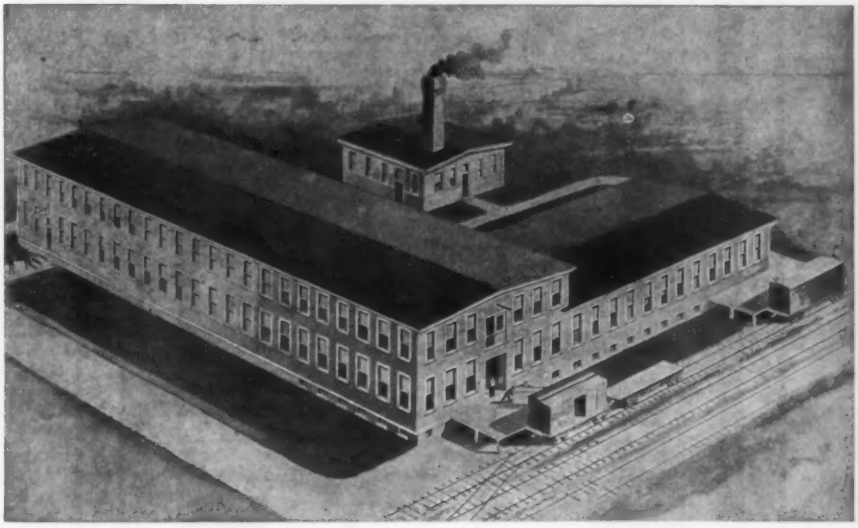
Always Up-to-Date!

When we see a chance to improve our machinery we do it, even though we have to discard valuable patterns and special tools. We don't hold back because the old model was "good enough and superior to anything else." So with our works.



This new plant contains every facility for building

The Best Preparatory Machinery in the World.

It is manned by men trained to this special work and managed by men who know what manufacturers want and who strive to anticipate their needs.

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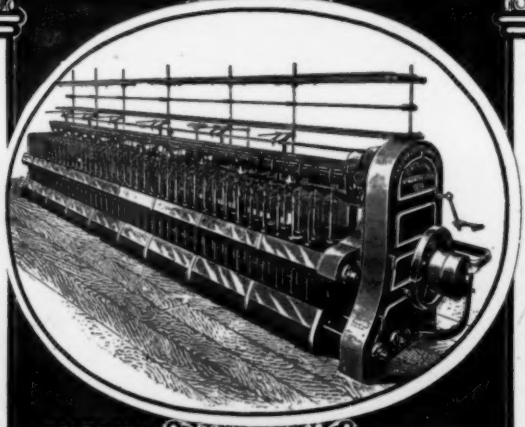

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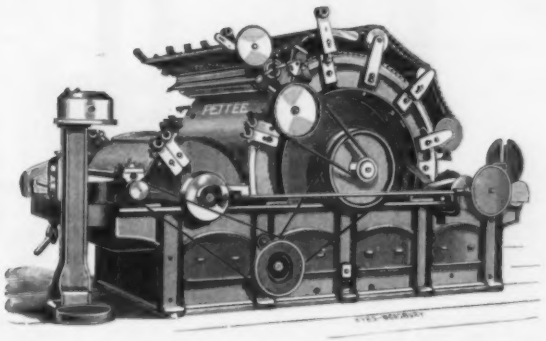

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Is a Great Labor Saver.

KNUCKLE JOINT PRESS. WITHOUT KNUCKLE JOINT.

It is designed especially for piling cases, bales and heavy packages, or elevating them through a door or opening. A man can lift 800 pounds with it. It is easily handled and while strong and substantial can be rolled around at will. Many mills are using them.

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For SCOURING WOOL, Etc.

It will not only lessen your expense, but it will make your wool much softer, whiter and loftier.

If you are not using WYANDOTTE WASHING SODA, order one to five barrels from your supply house, using it according to directions, and if results are not satisfactory return the unused portion at our expense; the trial shall cost you nothing.

If interested write us for further particulars and directions.

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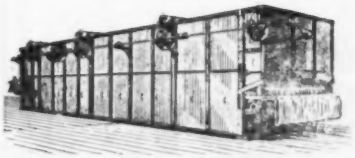

Automatic Yarn Dryer.

For Hosiery, Underwear, Yarn, Cotton Stock, Wool, etc.

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YARN SCOURING MACHINES,

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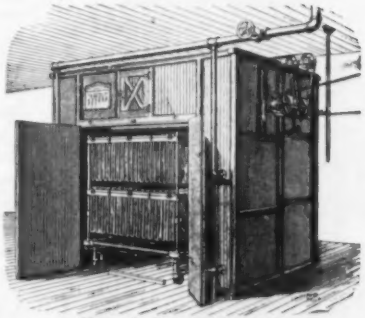


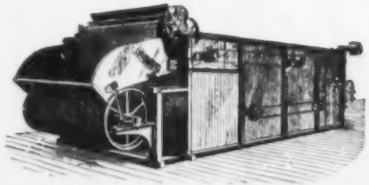
Truck Yarn Dryer.

FEED ROLLS, LICKERS-IN.

Phila. Textile Machinery Co,

Hancock and Somerset Sts.,

PHILADELPHIA, - PENN



Automatic Cotton Stock Dryer.

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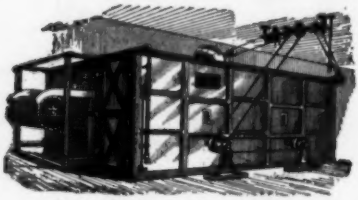
"HURRICANE" DRYERS

—FOR—

WOOL, COTTON, HAIR, YARN, STOCKINGS, UNDERWEAR, &c.



Automatic Stock Dryer for Cotton and Wool.

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Yarn Scouring Machines.

"HURRICANE" FANS

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Best in Construction. Lowest in Price

Plans, Estimates and Catalogues sent upon application.

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A PERFECT PIN TICKET

For Cloth Samples and Garments.

Easily and quickly applied to fabrics of any weight.
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The machine does the whole thing.
It is cheap, serviceable and durable.

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PRINTS the TICKETS as they are attached if desired.

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Formerly LEVER & GRUNDY

BUILDERS OF

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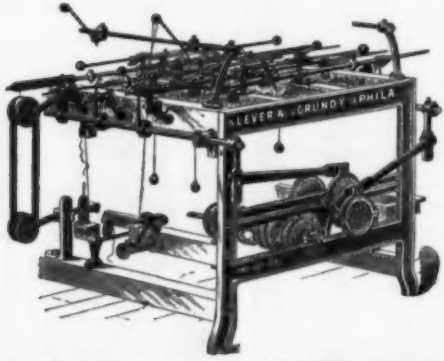

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BANDLESS SPINDLE SPOOLING MACHINES. Adapted to the finer grades of yarn and to the finest silk.

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Beaming Machines, Sectional Warp Mills, Chenille Cutting Machines, Reeling Machines to prevent waste at the bottom of mule bobbins.

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All Styles and Kinds for Flat and Round Braids.

SOLID SASH AND CURTAIN CORDS.

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BRAIDED FABRICS.

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LOOMS, DOBBIES, HARNESS MOTIONS

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FREIGHT ELEVATORS, PATENT FRICTION CLUTCHES.

5000

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Now in Use.

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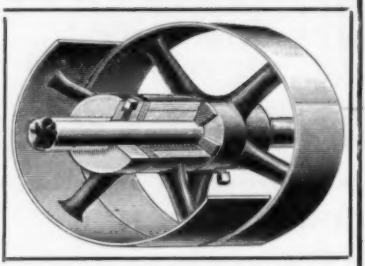
BOSTON.

ROBT. C. WEBSTER, Manager



You don't want friction,
You don't want oil,

but you stand the nuisance of oil, in order to lessen friction—and so you get *both*.

Use Arguto Oilless Bearings and get rid of both.

They're unequalled for loose pulleys and light shafting

It costs nothing to try them. Send us size of shaft and we will send you a bearing for trial FREE, if you mention this paper.

Arguto Oilless Bearing Co.
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WOOD RIM PULLEY
With Iron Hubs and Arms.

Heavy Single Arm Pattern,

This illustration shows our Heavy Single Arm Pulley The one selected for this cut was 48 inches in diameter, with face 15 inches in width, and strong enough for a three-ply belt. The Rims are built either split or solid with clamp hubs.

CHASE PULLEY CO., Providence, R. I.
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Here Is a Letter Worth Reading.

ALBANY, N. Y., Mar. 5, 1902.

GUILD & LORD,
Publishers Textile World.

Gentlemen:—

When we began to advertise Stephenson Bar Belt Dressing with you we had less than three thousand customers on our books, while to-day we have considerably over fifteen thousand.

Advertising alone could never have accomplished such results in the length of time that we have been calling the attention of your readers to our product, but good news travels fast, and so does the merit of a reliable article among well pleased users. Where it is tried and found to "fill the bill" that man tells his friend in a neighboring mill and so on.

While we have no reason to complain, still, from our standpoint the only wonder is that even more mills are not using our Belt Dressing.

We are more than ever convinced that nothing has yet been devised for use on slipping belts that can compare with it for convenience, efficiency and economy.

In one sense you know we have no competition. Being the highest priced preparation on the market sold for the purpose for which Stephenson Dressing has become famous, Viz., Belt Preservation and Slip Prevention, it stands in a class by itself and is not a sloppy mixture, nor does it require an expert to apply it to a belt.

Our business methods seem to meet with the approval of hosts of good friends in the textile field, and we would like to hear from one and all of your readers who are at all interested in keeping their machinery up to its full capacity for the minimum cost—results considered.

Yours very truly,
STEPHENSON MFG. CO.
E. A. KELLOGG,
Secy. and Treas.

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OUR MISSION ON EARTH
IS TO DESIGN, MANUFACTURE AND
INSTALL

Complete Power Transmission Equipments

FOR THE FACTORY, MILL OR
POWER HOUSE

We are enabled to give prompt and personal attention to every inquiry. Capable engineers, located both at this office and the various branches enumerated below, are ready at a moment's notice to advise and submit estimates of cost upon such proposed outfits as may be required.

Our facilities are the largest in the world in this exclusive line of manufacture, with equipment thoroughly modern, thereby enabling the execution of orders to meet any requirement.

Our line embraces every good thing in Power Transmitting Appliances. Constant improvement is our watchword, with the abstract fact always kept in view of securing the reduction of fractional losses to the minimum in these devices.

An experience of twenty-three years has taught us how to secure the maximum from the minimum—that is, the maximum of effective power transmitted from the minimum of coal pile energy, a fact we shall be pleased to demonstrate.

We originated the "Independence" Wood Split Pulley, now universally used the world over. We were also the pioneer manufacturers and patentees of the "Dodge" American System of Manila Rope Transmission—acknowledged as the most economical and modern means of transmitting and distributing power. We have installed thousands of these drives.

When contemplating improvements to your works, or the erection of new plants, we will be pleased to co-operate with you and advise as our experience dictates.

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Entire Outfits for New Mills, or small and odd items that you don't know just where to obtain, can be found at the

AMERICAN SUPPLY CO.
PROVIDENCE, R. I.

in Mill Supplies.

E. Dixon. Established 1876. F. M. Dixon.

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Sole Manufacturers of

Dixon's Patent Locking Saddles and Stirrups.

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

The Stirrup is always in place.

No bent stirrup resting on rolls.

Manufacturers of all kinds of **Saddles, Stirrups and Levers.** Send for Samples and Prices.

Spinners' Supplies in general.

KILBURN, LINCOLN & CO.,

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Represented in the South by O. A. ROBBINS CHARLOTTE, N. C.

SPINDLES AND FLYERS.

For Cotton, Woolen, Worsted, Silk and Flax Machinery.

Also Steel Caps, Bolsters, Steps, Tubes, etc.

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Successor to E. A. Leigh & Company,

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For All Classes of Work.

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GEORGE HODGSON, Ltd., Looms for Worsteds, etc.

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HEDDLE FRAMES.
WIRE HEDDLES.
TEMPERED STEEL WIRE
STRIPPER CARDS.

ADDRESS L. S. WATSON MFG. CO., LEICESTER, MASS., FOR THE VERY BEST MADE

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Mill Sewing Machines.

Sews any fabric, wet or dry, thin or thick, fine stitch or coarse stitch.
SEND FOR CATALOGUE.
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BUILDER OF
IMPROVED SPINNING AND TWISTING MACHINERY,
For Hard or Soft Twines, Lines, Cordage, etc.
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Write for particulars in regard to our new machine for spinning heavy Cotton Yarn direct from Drawing Sliver for Cotton Rope, etc.

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TEXTILE MACHINE WORKS,
THUN & JANSSEN, Reading, Pa.
Manufacturers of
BRAIDING MACHINES OF SUPERIOR QUALITY
for making Dress Trimming Braids, Cotton Tapes, Underwear Braids, Shoe Laces, Spindle Banding, etc. Winders, **Doublers.** Measuring Machines, Reelers, Singeing and Finishing Machinery. Special machinery.

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Our Patented Specialties.
DOUBLE RIBBED RINGS, U.S.
STANDARD TRAVELER CLEANERS,
METALLIC BURNISH LIKE
THAT PRODUCED BY
THE TRAVELER.

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NATIONAL RING TRAVELER CO.
—MAKERS OF STANDARD—
SPINNING AND TWISTING TRAVELERS
OF EVERY DESCRIPTION.
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A. CURTIS TINGLEY, Treasurer.

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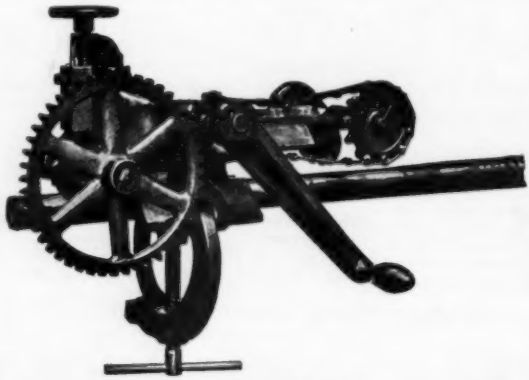
LEICE REEDS,
GUIDE REEDS,
SLASHER COMBS,
HEDDLE RODS, ETC., ETC.

NOTE:—Our Portable Key Seater will enable you to cut your Key Seats on any size shafting during the noon hour, and without removing the shafting from the hangers.



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MAILS.
Liberal Discount to Dealers.

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A Heddle Made Out of One Piece of Steel.
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Patented.

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Watchman's Clocks, Electric and Portable;
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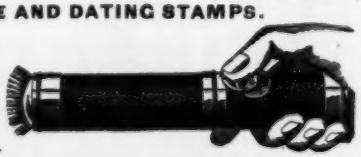

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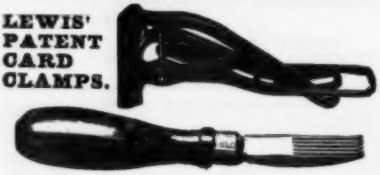

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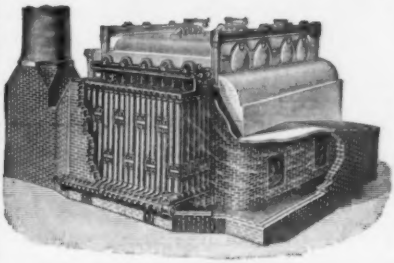

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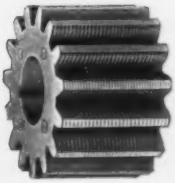

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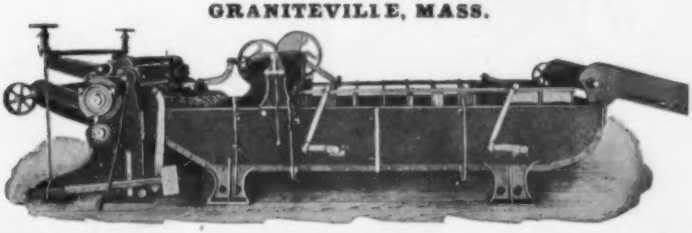

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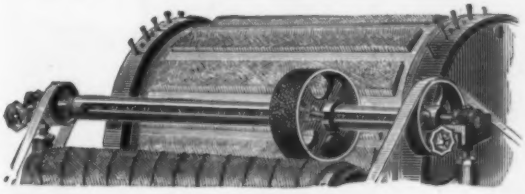

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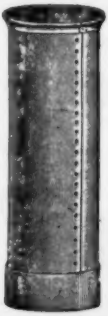

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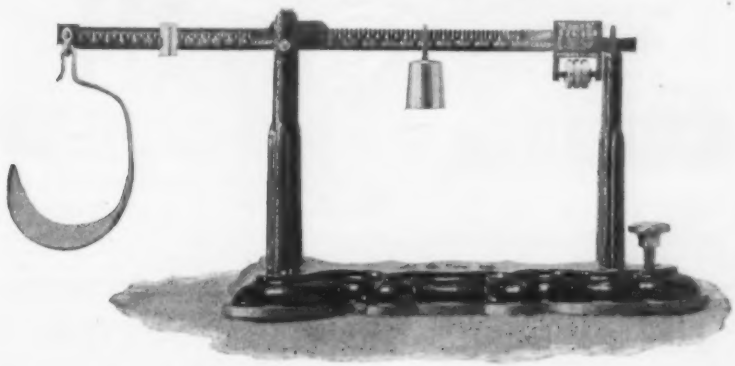

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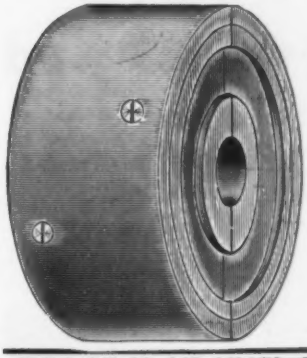

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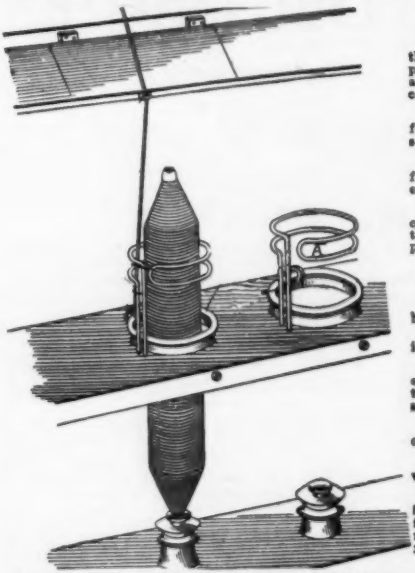

The following advantages are claimed for this protector.

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5. Frame and rail more perfectly balanced.

6. Heavier travelers can be used.

7. The yarn is wound tighter and more uniformly on bobbins.

8. A material saving in time of doffing, as more yarn is wound on, and longer bobbins can be used.

9. Saving of time of the operator on account of fewer ends breaking, thereby increasing the quality of yarn, and the operator can attend many more spindles in consequence.

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11. No accumulation of lint, dust and dirt, which invariably results in the use of blade separators.

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WITH
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7 1-2 CENTS PER SPINDLE.

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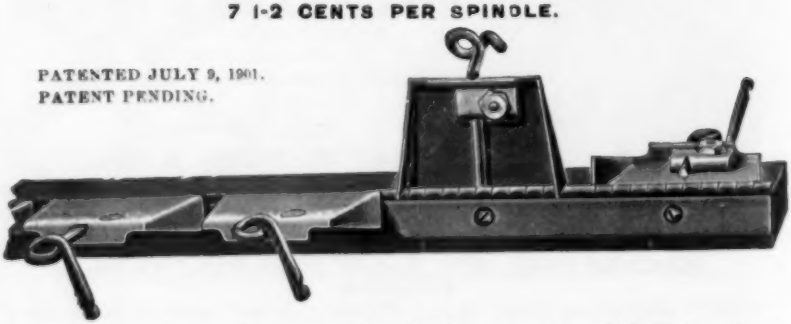

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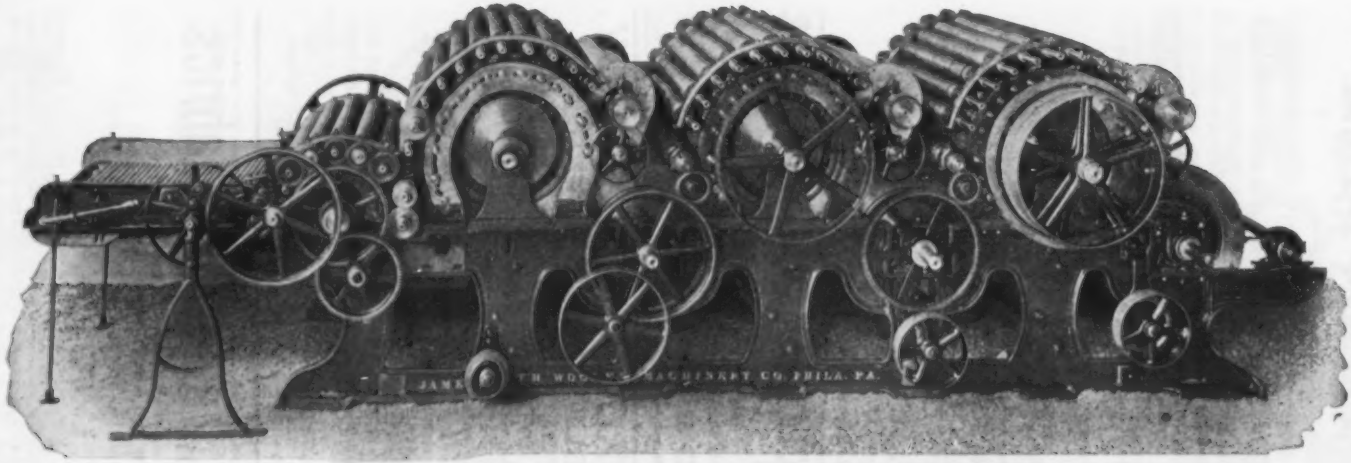

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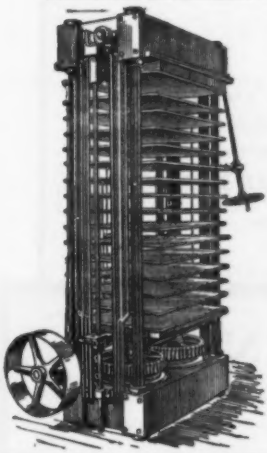

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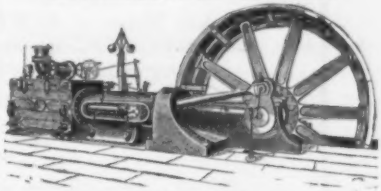

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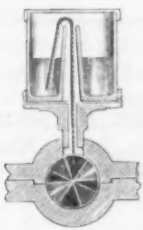

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Textile Patents.

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Apparatus for Unbaling Raw Cotton. 697,459. Samuel Ecroyd, Chorlton-Cum-Hardy, near Manchester, England, and Edward E. Marsden, Didsbury, near Manchester, England.

Carding Engine. 696,437. John R. Hinchliffe and James Hall, Maynard, Mass.

Embroidering Machine. 697,269. David Nadel, Berlin, Germany.

Filling-Replenishing Loom. 697,004. Jonas Northrop, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a corporation of Maine.

Head of Pile-Wire for Looms. 697,263. Hector L. Matton, Yonkers, N. Y.

Jacquard Card Punching Machine. 698,347. Oskar Zerkowitz, Bradford, England.

Knitting Machine. 697,616. Emil J. Franck, Collingdale, Pa.

Knitting Machine. 697,953. Robert W. Scott, Philadelphia, Pa., Louis N. D. Williams, Ashbourne, and Harry Swinglehurst, Philadelphia, Pa., assignors to said Scott and Williams.

Knitting Machine. 698,045. James J. O'Brien, Boston, Mass.

Loom-Shuttle. 697,508. Fay H. Martin, Hyde Park, Mass., assignor to the American Loom Company, Readville, Mass., a corporation of New Jersey.

Loom Shuttle. 697,713. Oscar Gleason, Putnam, Conn., assignor to Draper Company, Hopedale, Mass., a corporation of Maine.

Loom. 697,745. Jonathan E. Painter, Minneapolis, Minn.

Method of Obtaining Threads from Cellulose Solutions. 698,254. Emile Bronnert, Nierdermorschweiler, and Max Fremery and Johann Urbann, Aachen, Germany.

Machine for Copying Patterns for Jacquard Cards. 696,708. John T. Bolton, Fall River, Mass., assignor of one-fourth to Thomas McAuliffe, Fall River, Mass.

Machine for Shearing or Clipping Wool or Hair. 697,824. William H. Eyres, Sydney, New South Wales, Australia, assignor to Burton and Ball, Limited, Sheffield, England.

Mule. 696,321. Francis Reynolds and William J. Underwood, Fall River, Mass.

Method of Truing up the Drawing Rolls of Spinning or Twisting Machines. 697,262. Frank M. Marcy, Worcester, Mass.

Picker-Check for Looms. 697,562. Charles A. St. Onge, Dover, Maine.

Pattern Mechanism for Embroidering Machines. 697,270. David Nadel, Berlin, Germany.

Pile Wire Motion for Looms. 698,279. Leonard H. Hartley, Thomas H. Namack and John Newhall, Lowell, Mass.

Process of Making Repaired Fabrics. 696,830. David Margolius, Norfolk, Va., assignor of one-half to Raphael Margolius, Norfolk, Va.

Process of Cleaning Wool. 698,207. Emile Maertens, Providence, R. I.

Process of Degreasing Wool. 698,209. Emile Maertens, Providence, R. I.

Process of Cleaning Wool. 698,210. Emile Maertens, Providence, R. I.

Process of Cleaning Wool with Colatile Solvents. 698,211. Emile Maertens, Providence, R. I.

Roving-Breaker for Spinning Frames. 697,018. Alonzo E. Rhoades, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a corporation of Maine.

Swivel Loom. 698,208. George F. Hutchins and Joseph T. Cyr, Worcester, Mass., assignors to Crompton & Knowles Loom Works, Worcester, Mass., a corporation of Massachusetts.

Stop Motion for Knitting Machines. 698,089. Frank Wilcomb, Norristown, Pa.

Stop Motion for Knitting Machines. 698,090. Frank Wilcomb, Norristown, Pa.

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Shuttle-Guard for Looms. 696,826. Jurgen P. Lange, Passaic, N. J.

(Continued on page 967.)

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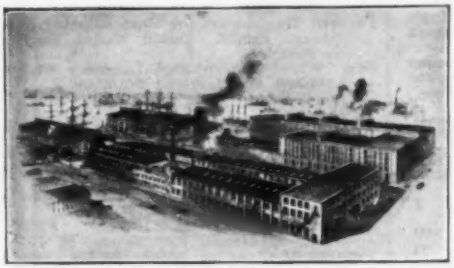

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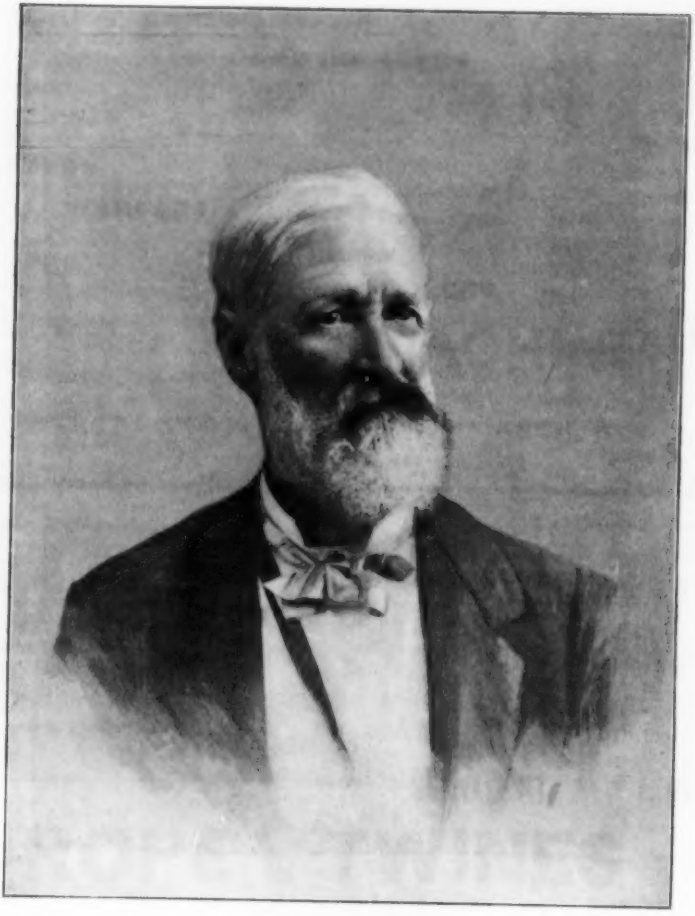


SAMUEL WEBBER.

TEXTILE WORLD.

Vol. XXII. MAY, 1902. No. 5.

SAMUEL WEBBER.

The subject of this sketch was born in 1823, at Charlestown, N. H., where he now resides. In 1841, he entered the employment of the Merrimac Manufacturing Co., Lowell, developing the etching process for engraving rolls. While there he studied mechanical drawing and familiarized himself with the operations of cotton manufacturing. He also watched with interest the early experiments of Mr. Francis in measuring water, and assisted Dr. S. L. Dana in his experiments with boilers and fuel combustion.

In 1847, Mr. Webber went to Lawrence, Mass., as draftsman and assistant engineer in building the former Bay State Mills. He was superintendent of these works in 1849-1850. In the last named year his health failed, and he was sent to Europe to study worsted and linen manufacture there and note improvements in cotton machinery. While in London, Mr. Webber acted as one of the jurors on manufacturing machines and tools at the original Crystal Palace, in Hyde Park.

After his return to this country, he set up a series of worsted machines in Lawrence, Mass., in 1852, and conducted extensive experiments with them. In 1853, Mr. Webber went to New York, and arranged the exhibition at Reservoir Square, acting as commissioner of juries.

In 1854, he went to Springfield, Mass., and finished building a cotton mill at Indian Orchard, installing the mill with machinery and operating it for four years as the Ward Manufacturing Company. In 1858, he went to Manchester, N. H., as manager of the Manchester Print Works, remaining there for six years, resigning in 1864, to take charge of the Portsmouth Steam Mill, manufacturing spool cotton. While there, Mr. Webber, in company with J. S. Davis, of Holyoke, Mass., and Phineas Adams, of Manchester, N. H., called the first meeting for the formation of the New England Cotton Manufacturers' Association, which was the successor to the Hampden County Association, established by these gentlemen in 1854.

Early in 1861, he was commissioned colonel and aid-de-camp on the staff of Governor Berry of New Hampshire and was commissioned to raise, equip and command the First New Hampshire Light Battery, in May, 1861. He went to Washington with this battery and the Fourth New Hampshire Infantry, in October, 1861, and turned over the troops to the United States Government.

In 1865, Col. Webber did a large amount of engineering work during the autumn and winter for the owners of the water power at Bellows Falls, Vt., measuring the flow of water at that place. After the failure of the Portsmouth Mill, in 1865, due to the heavy stock of high priced cotton in the mill and the great fall in prices following the close of the war, Mr. Webber turned his attention to engineering again, but acted for a time as assistant appraiser at the Port of New York, having charge of the division of English textiles.

In 1870, he collated the returns of

the industrial division of the census at Washington, and in 1871, took up the question of the measurement of power, which he has followed ever since, measuring by dynamometer the power used by cotton and other machinery, indicating steam engines, testing turbines, measuring water flow, examining water privileges, and acting as expert in power cases in court. He has tested turbine water wheels all the way from Maine to Georgia.

At the Centennial Exhibition, in 1875, Col. Webber was one of the judges of the cotton and cotton machinery group, and personally prepared many of the reports and data. He was one of the judges at the Atlanta Exhibition, in 1880, and planned and laid out the power hall in New Orleans, in 1884.

Col. Webber is a writer of technical articles, a great many of which have been widely read, and has written a large number of poems, as well as sketches of hunting and fishing trips, which have been widely published. One of the first of his poems to attract attention, "Flowers, Bright Flowers," was published in 1861.

FLOWERS, BRIGHT FLOWERS.

Flowers, bright flowers! the smiles of the earth,
In the footsteps of angels they sure had their birth,
The charm and delight of the long summer hours,
Through all life's changing scenes, bring us flowers, fresh flowers!

Bring the "trailing arbutus," first herald of spring,
The roses of June and the violets bring,
Till the gentian's blue eyes beam mid autumn's cold showers
As each blooms in its season, bring flowers, fresh flowers!

Bring flowers, fresh flowers, the babe to bedeck,
As it twines its soft arms round its mother's fair neck,
While its deep searching eyes gaze so fondly in ours,
Strew the pathway of childhood, with flowers, fresh flowers.

Bring flowers, fresh flowers, in wreaths for the bride,
As she stands at the altar in maidenly pride,
While her hopes and her fears dwell on life's coming hours,
Forecast her bright future with garlands of flowers.

Bring flowers, fresh flowers, to strew on the tomb,
In their beauty and fragrance, and brightness of bloom,
Though the spirit has soared to unwithering bowers,
Strew the grave of the mortal with flowers, fresh flowers.

Bring flowers, fresh flowers, the altar to crown,
Where the Spirit of Love on his children looks down,
To the Maker of worlds and the Ruler of powers,
No incense so fit as his own fragrant flowers!

Another, beginning "Ring Out Ye Bells, Ring Out," was written to be sung in the churches of Portsmouth, N. H., just after the surrender of Lee's army at Appomattox, and was published at that time, but not sung as originally intended owing to the assassination of Lincoln before the following Sunday.

Another poem was "Locksley Hall Twenty Years After," being an answer to a very pessimistic poem of Alfred Tennyson's. Others were: "The Grave of Tennyson;" "In Memoriam —John G. Whittier," and many smaller poems published in Forest and Streams, among which may be mentioned, "The Deserted Nest," "New Hampshire's Home Coming," and "The Trout of the Mountain Stream."

AS EUROPE SEES US.

With the appearance of overproduction in the home market, a foreign outlet for goods will become a necessity. This is realized in Europe probably better than it is here. Not only in cotton manufacturing, but in nearly every industry Europe looks upon the United States as her commercial foe, and this animosity is strongest in Germany, whose commercial ambitions of that nation are threatened by the avalanche of low priced products from America.

The journals of Europe may be filled with rantings against America, and the streets of European cities may be filled with yelling mobs, storming the stores where American goods are

sold, but it is not to such impotent acts that the people of Europe are to confine themselves in their contest with this country. The ruling classes of Europe realize fully the real danger that threatens not only their trade supremacy but their social system, and this danger is to be met quietly, with orderly and systematic processes of offense and defense devised by the ablest thinkers and organizers on earth.

The following extract from a lecture delivered recently by Dr. Grunzel in Reichenberg, Bohemia, shows how clearly the power of America is understood and how patiently and systematically it is to be met.

"The commercial policy of the European states indicates a contest with America. I do not mean that a tariff war is about to break out between the old and the new world, but an adjustment of European tariffs is likely to be made with a view of meeting the competition of America.

"There have been three well defined phases of the invasion of Europe by American products: First, depriving European countries of their foreign trade, particularly that with England; Second, depriving European countries of the export trade to America; Third, the sale of American products in European markets.

"The preponderance of American farm products has been felt for the past 80 years. At first, the competition in this line was indicated by the loss of the English market to continental countries, but very soon the inland markets of Europe were invaded by food products from America. Today, the United States is sending to Europe, more than half of her gigantic production of cereals at a price that forbids competition.

"While the cost of production of American wheat according to the Agricultural Department at Washington amounts to $1.43, this cereal cannot be produced in Austria for less than $3.68 or in Hungary for less than $2.84 to $3.26. Assisted by cheap land and water transportation, American wheat is laid down in Europe for $2.04 to $2.24. The same conditions are found with other products such as lard, bacon, meat, and within recent years fruit also.

"It is interesting to note the result that this competition of American products has on the various European states. Each one hastened to protect the home market, and duties were levied upon agricultural products in Germany in 1879, Austria in 1882, France in 1885, Italy and Switzerland in 1887, Sweden in 1888, Spain in 1892.

"The second phase: The exclusion of European countries from the American market began with the McKinley bill in 1890, and has been made more strict since that time by the Dingley bill and the strict enforcement of the customs administrative law. Many small, but very important industries have in this way been destroyed in Europe. An example is found in the Vienna mother of pearl industry, which has never been able to recover from the heavy blow thus inflicted; in fact, every industry engaged in the export trade with America has been seriously damaged. A proof of this is found in the trade statistics, which show that during the past ten years from 1891 to 1901, the exports from America to Europe have increased from $705,000,000 to $1,136,000,000 per year, while the imports of European products into America during the same time have sunk from $459,000,000 to $429,000,000 per year.

"The third, most recent and most dangerous phase is found in the invasion of American products into the European markets. The exports of iron to Europe have continued relatively small owing to the enormous demand for this material in the home market in America. The official outline of the new German tariff, however, indicates the fear on the part of Germany, that an avalanche of American iron will soon make its appearance in European markets. That this fear is well grounded, is seen from the fact that the cost of the production of iron in Austria is $1.43 to $1.63 for 100 kilos, while in the dominion mines of Canada, this cost amounts to but 42 cents per 100 kilo. Some idea of the power of this great American giant is seen when we examine the trade in agricultural implements, sewing machines, tools, car wheels, mirror glass, manufactured wood and printing paper. The manufacture of German harmonicas has been partially destroyed, and now in the textile industry American competition is beginning to be felt by the appearance of American binder twine in Europe.

"A glance at the following table shows what a serious danger this American invasion is. This table gives the value of the exports of the various products at the beginning and end of the last decade:—

	1891.	1901.
Agricultural implements	$3,200,000	$16,300,000
Railroad Cars	4,900,000	8,400,000
Cotton Goods	13,600,000	2,050,000
Steel Rails	300,000	10,800,000
Leather and leather goods	13,300,000	26,800,000
Paper and paper goods	1,300,000	7,400,000

"The question is in what way shall Europe meet this danger.

"It has been frequently proposed that the European nations unite in a general tariff union directed against the United States. I do not believe that this will be done, since the commercial relations of the old and the new world are too intimate and too intricate to permit of a tariff war. The results of a commercial war are much more difficult to determine that are those of war with artillery and soldiers.

"Since such an offensive alliance in not probable, each country must devise its own means of defense, of which there are many. First af all, each state will regulate its tariff so that the duties are higher on such agricultural and industrial products as are likely to meet with American competition. Then again, possibly, the system of mutual preference will be adopted in order that America may not enjoy without cost all the advantages that European states are com-

pelled to obtain by mutual trade agreements. That system of reciprocity devised by America herself may be adopted in a modified form by European nations.

"I do not have in mind a tariff union, since the agricultural industry in separate countries has been developed too far to admit of the tariff on such productions being removed. It will be possible, however, with specialized tariffs, commercial treaties, etc., to increase and improve the market for special products, and thus guarantee the development of industry and the better employment of labor. More progress should be made in organizing our industries. One of the chief causes of the superiority of American industries lies in the trusts. Compared with these mighty aggregations of capital, the European cartel is but a faint and ephemeral vision. We cannot imitate the trusts, because such a vast amount in capital for special branches of industry cannot be secured, and then again, many other conditions are wanting in Europe.

"On the other hand, it will be found that opposition to the cartel such as has been manifested in Austria will disappear and at the same time the cartel will be modified and established on a more efficient basis.

"Germany occupies the chief place in the commercial contest of Europe with America. The German government expects to secure some advantages by means of treaties to be negotiated with America. Unless all signs are misleading, these expectations are doomed to disappointment, and then, as I hope, the commercial alliance of the European nations will be made."

From the foregoing we may get a faint idea of the systematic attack and defense that commercial Europe is to employ in what far seeing men consider to be a life and death struggle with America. The nations of Europe will watch and wait, and when they can safely do so, they will strike us hard with commercial treaties between themselves. The genius for organization that has made Germany the leading military power of Europe, is now to be exercised in organizing Europe for a trade contest with America.

In such a struggle the United States starts with great natural advantages. No other section of the globe produces such a vast surplus of products for feeding and clothing the people. Without our cereals and meat products Europe would starve. Without our cotton Europe would be naked. The present state of affairs is the result of slow development during a long series of years, and it cannot be suddenly changed without danger to thrones and society itself.

One hundred years ago, Great Britain produced sufficient wheat and other food products to support her population. Today her people would be starving in three months if the food supply from America was cut off. Last year, 1901, the corn, wheat, flour and provisions sent from this country to Europe were valued at $375,000,000, or over $1,000,000 per day, and this does not by any means include all of the food products sent there from the United States. Of this vast supply 65 per cent. was taken by Great Britain, and 13 per cent. by Germany. This food is a necessity to the people of Europe, and their inability to get it from their own soil is shown by the difference in cost of production cited by Dr. Grunzel.

Nor are the natural advantages of America less striking when we turn from food to that other necessity of mankind, clothing. The cotton alone that we shipped to Europe last year was valued at $300,000,000. Of this amount, Great Britain took 45 per cent., Germany, 25 per cent., France, 12 per cent., and the rest of Europe 15 per cent., leaving but 3 per cent. for other than European countries.

The cotton fields of the world are in our Southern States. During the civil war when the supply from that section was cut off, the most desperate efforts to secure an adequate supply elsewhere ended in failure. Cotton at that time sold as high as $1.90 per pound, and yet the rest of the world could not make cotton raising pay. If impossible then, how vain it is to hope for success now with cotton selling at 9 cents per pound, and the cotton fields of the Southern States capable, apparently, of an indefinite expansion.

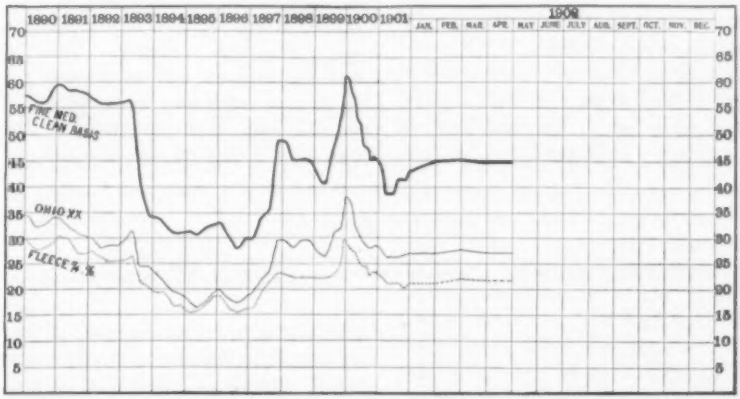
Germany is now making an earnest effort to raise cotton in her African possessions. She has had a party of Tuskegee men there for a year or more, endeavoring to establish the in-

dustry on a scientific basis. How unwillingly Nature responds to these efforts and how unlikely it is that Togo cotton will ever become an important rival of American cotton, is seen from the account of this enterprise given in the April issue of the Textile World by the leader of the party.

Nature has made the United States the garden spot of the world and she here pours her riches out, not alone for the people living within the arbitary border lines of these States, but for all the people of the earth.

The contest with America for which Europe is apparently preparing will be a contest between the arbitary and puny commercial treaties of Europe and the great forces of natural production. A contest of man with nature, whose final result cannot be doubted.

WOOL MARKET.



Dullness has been the rule in the seabord markets since our last report, and prices have declined slightly for the small quantity of wool that has changed hands.

The strike in the mills of the American Woolen Co., and the consequent curtailment of consumption that has been so manifest to the trade, has had a decided influence in restricting business in the raw material. The activity in mills outside of the combine has not been an offset to this loss, in spite of the fact that many of them have been running overtime, some all night.

The stagnation in the Eastern markets has been in sharp contrast, however, with the activity in the West, where the shrewd and thrifty wool grower has been disposing of his fleeces to Eastern buyers at prices considerably in advance of present quotations in Eastern markets.

In the light of this situation in the West, wool dealers who have looked upon the strike in the mills as injurious to them, may take comfort in the thought that Western prices would have been still higher, if wool had been selling freely in the East.

The optimism of dealers has a solid foundation in the prosperous condition of business throughout the country, but it may be just as well to bear in mind the plain teaching of the recent past that 50 cents for one pound of fine medium territory wool marks the point at which manufacturers turn their attention to the use of wool substitutes in large quantities. The wool trade is approaching the limit when 48 cents is paid to the grower for this grade with the idea in the mind of the purchaser that the manufacturer will take the stock at an advance.

CARPET WOOL.

Advices from Constantinople show a rather unusual state of affairs as regards this class of wool. Owing to the severity of the past winter, the character of the Syrian clip, which represents, roughly speaking, 25,000 to 30,000 bales or about 40 per cent. of the Turkish and Russian clip, will be materially changed.

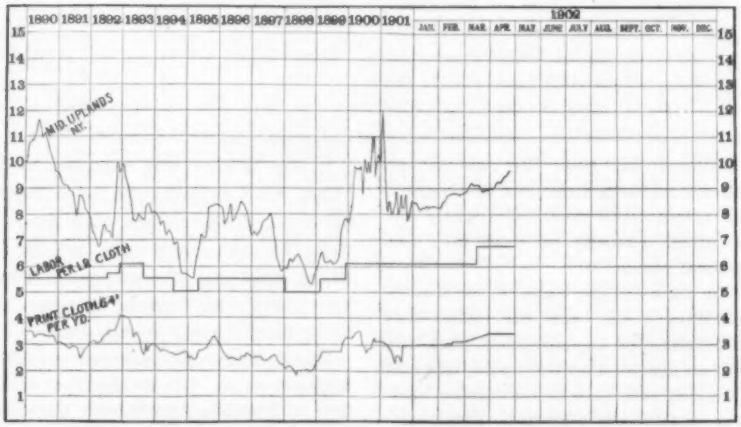
The mortality among the sheep in that section, as near as can be ascertained, will reach as high as 50 per cent., and the wool from the remainder will, of course, be affected more or less by severe weather.

During the past few years western ideas on the subject of wool manipulation have led to the establishment of a number of pulleries in the East, so that although a large portion of the stock coming from the winter killed sheep will be what is known in the market as "dead wool," a certain amount will be pulled.

The prospects for the sale of good carpet combing wools in this country are bright, for the market is comparatively bare. Good combing wools are pretty scarce today and shipments will probably find a ready market at current prices or better.

A larger quantity of China carpet wools will be released this year. During the recent disturbances in China only a small proportion has found its way into this country. That the amount shipped will be smaller than in normal years may be accounted for by the fact that undoubtedly much has been destroyed and pillaged.

COTTON MARKET.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901
1902
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
MID. UPLANDS N.Y.
LABOR PER LB. CLOTH
PRINT CLOTHS 64" PER YD.

Cotton during the past month has moved steadily upwards, due to the falling off in receipts from the South and the free purchases by foreign spinners. Domestic takings have been large, but with the approach to 10 cent cotton, manufacturers have grown conservative, claiming that the advances in wages and raw material have been balanced by no corresponding elevation in the selling prices of the manufactured products, and that making cotton goods under present conditions promises nothing but loss for the manufacturer.

Many cotton buyers have withdrawn entirely from the market, and, while this disposition will have its effect on the market for the staple, it yet remains true that the foreign and not the home demand is the predominating factor.

The situation in the goods market abroad is not of the brightest character; in fact, many of the English spinners are running on short time,

but weavers are busy and the restriction of yarn production is due to an accumulation of stocks of yarn, together with the unwillingness of spinners to assist in putting up still further the price of cotton for yarn they cannot sell.

A feature of the cotton market has been the decided firmness at Southern centres. Reports indicate that the acreage for the coming season will not be much in excess of that of the season just closed. The Chronicle estimates the world's visible supply April 25th, at 3,772,869 bales, as compared with 3,800,790 bales in 1901, 2,986,952 bales in 1900, and 4,933,708 bales in 1899.

Egyptian cotton is higher and holders in Alexandria are very firm in their views as to values. In Peruvian the demand has been fair and prices well maintained.

Notes of the Month.

—The discussion of the so-called shoddy bill has revealed a remarkable state of ignorance in regard to the raw material of clothing. This ignorance has been exhibited in the press by writers who assume to instruct their readers in regard to the subject. We reproduce the following extract as a sample:

> Shoddy, shoddy! What is shoddy? The common expression of shoddy is that it is a textile filled with a wood pulp by a stamping process, or is a mixture of wool and cotton. That, strictly, is not true. Real, genuine shoddy of the kind to which the National Live Stock Association objects is unraveling of old rags, bleaching the wool of them and reweaving the rotted, dead stuff into new garments as the Simon-pure, new strong fibred fleece from the sheep's back.

—Reports concerning the cotton mill in Annam indicate that the conditions in this country are not entirely favorable to the industry. In 1890 a mill was built by French colonists at Ksach-Kandal, and since then passed into the possession of the Chinese. It is equipped for handling 199,773 lbs. of cotton per day, or 71,442,000 lbs. per year. The actual consumption in 1901 amounted to but 33,075,000 lbs. The deficiency in production is said to be due to the difficulty in securing a sufficient supply of cotton from the neighboring country. The supply is irregular, some days the inhabitants bringing cotton in such large quantities that it is necessary to store it with the consequent risk of fermentation and injury; while at other times the mill is compelled to shut down owing to lack of raw material. The cultivation of cotton is carried on by the Chinese families in a very haphazard and go-as-you-please manner, and consequently the size of the crop in one year offers no guide as to that of the succeeding year. French colonists are endeavoring to put the industry of cotton raising on a better footing, but the scarcity of labor is said to be the greatest drawback. This will be a matter of surprise to nearly everyone in this country, where the idea has become firmly rooted that there is a great over-supply of labor in China. Experiments in raising Sea Island cotton in Annam have not proved successful. While the quality and yield of the first year were satisfactory, numerous diseases attacked the plants grown since that time, and have rendered the industry a complete failure. Better success however is being attained in the raising of native varieties.

—When the artist thinks of gold, he loses the sense of the beautiful.—Diderot.

—Silent fools are like empty cupboards under lock and key.—Petit-Senn.

—The peasant has but one settled idea,—to live poor that he may die rich.—Stendhal.

—Let us respect gray hairs, but especially our own.—Petit-Senn.

—We live only to do better.—Mme. Swetchine.

NEW ENGLAND COTTON MANUFACTURERS' ASSOCIATION.

Annual Meeting, Boston, Mass., April 23, 24, 1902.

Over 200 members and guests of the New England Cotton Manufacturers' Association were in attendance at the opening session of the New England Manufacturers' Association, Wednesday, April 23d.

They were welcomed to Boston by Mayor Collins. The President of the Association, Charles H. Fish, Dover, N. H., in introducing the Mayor, made a happy reference to his Honor's campaign against high costs in municipal government, and stated that the attack had been made with all the energy and success that attended mill managers' onslaughts on the same evil in their mills.

Mayor Collins stated that in presence of such a gathering of experts in the cotton business he would not risk much in the line of speech making, but that it afforded him great pleasure to welcome on behalf of the city, an association that had done so much for Boston, where it might be said that in the absence of natural wealth, the people were compelled to live on their wits or on the rest of the world.

President Fish then delivered his address:

Gentlemen of the New England Cotton Manufacturers' Association:

That mighty personification of perpetual motion, the Wheel of Time, has completed another revolution and we meet again here at our own Home.

It is with great pleasure that I, as your President, greet you and welcome you all to this the Seventy-second Convention of this Association, and I do congratulate you, gentlemen, upon the fact that no matter how fast this Wheel revolves (and you know it moves faster and faster each year), or no matter how many of us finish our life's work and fall from the line, we as an association, the New England Cotton Manufacturers' Association, with the impetus already obtained, will continue moving steadily forward, growing stronger year by year, an ever increasing factor in the cotton industry of our country.

Today we find ourselves in a most satisfactory condition with brilliant prospects for the future. Our standing among the technical associations of the world is such that to be a member of this Association is an honor, which you must not under-estimate. Our time is not yet come, however, and in fact it never will come, when we, or our successors, can afford to rest on the oars or allow our interests to flag in the slightest degree.

The progress of the world compels concerted, as well as intelligent and energetic action.

It should be your pleasant duty to keep constantly in touch with your Association, which must some day be the one great representative body of cotton manufacturers of North America, in all that pertains to the rapidly advancing forefront of the progress of everything that is tributary to fabrication of cotton into cloth.

This is no slight generalization, as the work of the members of this Association represents the culmination at the present day of the prehistoric process of clothing humanity, amplifying in the amount of material and artistic taste with every step in the development of mankind, from the savage to the enlightened people of today.

This textile art embraces the highest applications of the various branches of engineering, the wonderful creations of invention, the discoveries of chemistry, the gathering of the beauties of Nature into the conventionalized artistic designs of mod-

ern fabrics, but above all, it represents the concentration of skill, industry and intelligence in the organization of the modern mill, by which the co-operation of all measures of intelligence and all measures of skill may become tributary to the final results.

That we enlarge our active membership is most important. I trust that the time is not far distant when we shall have among our members representatives from every cotton mill in this great northern hemisphere.

The past year has been, perhaps, of unusual interest. Our fall meeting at Buffalo was one of great pleasure and benefit. The distinguished consideration shown the Association by the officials of the Pan-American Exhibition and the Buffalo Board of Trade was not without its effect.

Among matters of special interest, however, I would mention the establishing at the New Bedford Textile School, the William Firth Scholarship, made possible by the public spirited generosity of Mr. William Firth, a member of this Association.

In the same connection, I am pleased also to call to your notice the awarding during the year of five scholarship medals, to pupils in the textile schools.

The importance of the technical education becomes more apparent each day, and it is our special duty to encourage and to assist this branch of education in every way possible.

I would also briefly allude to the beautiful bronze tablet (a model of which you see before you) which is to be erected by the Association from funds collected by subscriptions from members and friends, a fitting testimonial to the inventor of the cotton gin, Eli Whitney.

Important changes and improvements have been made during the year, the details of which are presented in the Secretary's report. The old methods, long since outgrown, have been superseded by a complete and modern system, by which it is now possible to conduct affairs of the Association on business principles, largely to the benefit of the Association and its members.

All these matters are of direct interest to each of you and I trust that all alike will manifest your approval by co-operating with your officers in the discharge of their duties. Without this co-operation, gentlemen, the task assigned to them is almost a thankless one, but with your co-operation and your sympathy, the task is one of pleasure and heightens the appreciation of the honor bestowed.

Touching briefly upon a subject of immediate interest and of utmost importance to us all, I regret to note the condition of unrest, growing more and more apparent among the operatives of the factories, in nearly every manufacturing district of the country. Some relief must be found, or some means provided whereby the conflicts which are becoming of almost daily occurrence, I will not say between capital and labor necessarily, but between employer and employee, can be avoided, for they must in time work results fatal, perhaps to both. In the consideration of this question, it is impossible to separate the interests of the two. You cannot to any extent injure the one without detriment to the other. The operative cannot be prosperous and happy unless the factory where he is employed is at least to some extent prospering, neither can you expect the factory to prosper in the long run, unless its operatives are prosperous and contented. You will agree with me that it is the duty of employers to be fair and just at all times to those in their employ, allowing to them the maximum wages that circumstances or conditions will allow, and when they have honestly done this, the fairness of their position should be recognized and they should be free from damaging or annoying interference.

It is the uncertainty of the situation, perhaps, as much as the actual conditions, which interferes so seriously with the prosperity of all.

A prominent member of this Association once said that as long as a single bale of American cotton crossed the Atlantic, so long would there be room for more spindles in America.

Gentlemen, America has the ambition and energy, and she has the means; settle satisfactorily this great problem of capital, and labor, and remove this cloud of uncertainty which now hangs over us, and the time is not far distant when the only bales of cotton that cross the Atlantic will be on West bound steamers. The East bound to be sure will be loaded with cotton as now, but instead of its being raw cotton in bales, it will be the finished product, bearing the trade marks of America, a guarantee of superiority.

I wish for you all a most instructive and enjoyable convention.

Samuel T. Hubbard, President of the New York Cotton Exchange, then addressed the meeting. He said in part: "The invitation for me to address this meeting is deeply appreciated by the members of the New York Cotton Exchange, who believe that closer relations between the cotton manufacturing and cotton trade interests of the country will result in advantage to both.

"The merchant and spinner from the South, Great Britain, Germany, Russia, Japan and India, are seen daily on the floor of our exchange, but the New England spinner is conspicuous by his absence. This is the first time since the organization of our exchange in 1871, that we have been brought into close relations with your association, and we trust that it marks the beginning of a new era, in which the cotton manufacturer and cotton spinner may frequently meet and discuss questions of mutual interest.

"Let us now look at the use which can be made of a business organization to bring a positive force to bear to remedy the discriminations, either public or private, which work against the interests of the trade they represent.

"I have never known the December cotton crop estimated in the Department of Agriculture at Washington, to be up to the actual yield. It is always under the estimate. What the crop will eventually turn out, no one knows, but I believe it lies within the province of this Association to ascertain why crop estimates are always smaller than the actual yield.

"Cotton is now being carried to Europe for less money than to New England. The rate from New Orleans to Manchester, England, on the 8th of last March was 32 cents, while the rate to Fall River was 38 cents a hundred.

"Cotton bound to New York and consigned to New England points paid a higher freight rate than cotton in the same steamer bound for Liverpool or Bremen. Cotton shipped to Liverpool from Newport, Arkansas, pays a freight rate of 62 cents a hundred, while the rate to Lowell, Mass., was 75 cents.

"There are many other similar discriminations which I will not take time to repeat. The railroads also exercise the right of routing your purchases of cotton by such roads as they, not you, select.

"In short, the cotton which has gone to Europe this season has been handed to spinners abroad at a lower rate of freight than it has been handed to you. It is admitted that ocean transportation rates have been lower than for many years, but it is not right that cotton for export should be carried past your doors by transportation companies, incorporated under the American laws, at a lower rate than to you. In England a recent act of Parliament forbids such discrimination.

"The future of the New England spinner is in the export trade where he must compete with the cotton spun in Europe and surely the best use which can be made of this influ-

ential body is to remedy these discriminations against the welfare of the members, either by the government or the railroads."

The members listened to the address with close attention, and the adverse discriminations against which the New England Cotton Manufacturers are contending, made a deep impression upon the audience.

Secretary C. J. H. Woodbury then read his report. He stated that the student's medal provided for by the Moses Pierce fund, had been awarded to the following named students, who had shown the highest general excellence in their studies:

Lowell School of Design, Mass. Institute of Technology, Boston, to Arthur Eugene Sanford, 41 Corbet St., Dorchester, Mass.; Lowell Textile School, Lowell, Mass., to Bartholomew Moore Parker, Raleigh, N. C.; Philadelphia Textile School, Philadelphia, Pa., to James Voorhees Pomeroy, Graham, N. C.; New Bedford Textile School, New Bedford, Mass., to Nelson Allen Wood, New Bedford, Mass.; Georgia School of Technology, Atlanta, Ga., to Albert Spaulding Mead, Decatur, Ga.

The secretary's report contained particulars regarding the Firth Scholarship of the New Bedford Textile School, for which no applicants had as yet been accepted.

A model of the Eli Whitney memorial tablet at Rocky Creek, Ga., was on exhibition in the hall, and called forth many favorable comments. It is shown in the accompanying illustration.

The secretary requested the co-operation in compiling the necrology of past members of the association, in order that the next volume of the proceedings may be made complete in this respect.

Following the secretary's report, W. M. Crosby, Lowell, Mass., read a paper on Methods of Cotton Textile Instruction.

The next paper was entitled, Brick Factory Chimneys; Some Features of their Construction, by W. Wallace Christie, C. E., Paterson, N. J.

The afternoon session was opened by W. O. Webber, C. E., Boston, Mass., who read a paper on Hydraulic Compression of Air, illustrated by the stereopticon. In the method described, the air is carried down through pipes by flowing water; these pipes open into a suitable reservoir, where the water and air separate, the air being compressed by the water column.

From this reservoir the compressed air is carried in pipes to the motors. The illustrations shown were taken at the Magog Plant, Quebec, Canada, where the first compressor was installed to furnish compressed air for the printing works of the Dominion Cotton Mills Co.

Three other plants are now being constructed; one at Peterborough, Ontario; another at Norwich, Conn.; and the third at the Cascade Range, State of Washington. The practicability of this system is proved by the fact that a plant on this principle was built at the factory of the Dominion Cotton Mill Company, Magog, P. Q., in the spring of 1897, where it has been in successful operation ever since, for driving the engines in the printing department of their calico print works, where it entirely replaced steam.

Mr. Webber gave figures of cost, which indicated that, while water power for direct consumption at the site of the waterfall is the cheapest known form of power, yet for transmission purposes hydraulically compressed air offers a means of transporting power and giving results cheaper than electricity, and that both electrical transmission and compressed air transmission from water powers are cheaper than steam power.

The compressed air transmission also has a further advantage in the fact that, in order to utilize it, it is not necessary to go to an expensive outlay for electric motors, as the compressed air can be used directly in steam engines without requiring any alteration to be made in them.

The next article read was entitled:

FLYERS.

Fay H. Martin, Boston, Mass.

The inventor of the mode of spinning by rollers is ascribed to John Wyatt of Birmingham, England, who in 1733 made a model upon which was spun the first thread of cotton ever produced without the intervention of human fingers. The principle of this machine was to use rollers to draw the sliver to three, four or five times its former length and degree of fineness; after passing through the second pair of rollers, the reduced sliver is attached to the spindle and fly, the rapid revolution of which twists it into a thread and at the same time winds it upon a bobbin. This is the first mention of a flyer.

Other inventors in this line were Louis Paul and Thomas Highs, but it remained for Richard Arkwright, in 1768 and the following years, to perfect and reduce to a practical form the ideas of these and other inventors, as well as his own, and to him we must give the credit of very high inventive talent, as well as an unrivaled sagacity at estimating at their true value the mechanical contrivances of others.

The flyers upon Arkwright's original machine in 1769 were made of wood, with small wires on the side which led the thread to the bobbin; the arms were solid and without pressers. These flyers were not adapted to the spinning of roving, but were for warp yarn.

Arkwright, on his roving frame, allowed his roving to be deposited in revolving cans which supplied the necessary twist. About the year 1817 the fly frame was introduced for preparing roving for the middle and coarser numbers of both warp and weft.

Instead of the revolving cans of the roving frame, the fly frame had spindles placed at equal distances from each other, with a fly on the top of each one of the arms, one of which was made in the form of a tube for the purpose of receiving the roving and conveying it to the bobbin.

About the year 1820 the presser, or pressure finger, was applied to the flyer, which by its action compresses the material upon the bobbin upon which it is being wound, thus enabling a much larger quantity to be put upon them than would otherwise be the case.

Before the application of these the bobbins were filled very quickly, and the operation of doffing was necessary three or four times, while once is now quite sufficient. Formerly the bobbins had flanged heads in order to retain the roving upon the barrel, but these were long ago dispensed with. The roving, as it is now wound upon the bobbin, being coned at both extremities, the presser forms a guide which enables this to be done in conjunction with the action of the taper motion on the frame.

Since the introduction of the presser upon flyers, a great deal of thought and study has been applied to the perfection of them, and over three hundred patents have been allowed on flyers alone, each inventor, in most cases, striving to equalize the pressure on the roving as it is wound upon the bobbin.

The action of the presser has been confined to centrifugal force and springs, with the main thought to reduce the friction at the bearings of the presser, so as to get the full benefit of the centrifugal force.

No radical change was made in the form of the flyer since the first, all forms having the hollow arm, or tube, extending down the full length of the traverse, until 1894, when Thomas F. Dunn conceived the idea of cutting the arms off half the length and hanging a presser in such a manner as to form a continuation of the hollow arm.

This changed the presser from a centrifugal one to a centrifugal and gravity presser combined, also light-

ening the weight of the flyer about 25 per cent. at the same time. Another important feature about the new flyer is the reduction of friction upon the roving; as all manufacturers are aware, it is very beneficial to have as small amount of it as possible.

In the attenuation of the sliver from half hank to four, five and six hank in the roving, it will be obvious that when the strand of cotton has been attenuated to this degree and not having received more than two or three turns of twist per inch, its cohesive power is of the smallest degree, and the most perfect adjustment of winding process to the delivery of the rove by the front rollers is necessary to prevent strain or breakage; so that all the friction that can be eliminated from the flyer will help to make a stronger roving and reduce breakages to a minimum.

Take the present form of flyer with the roving entering the hollow arm at the top, the centrifugal force throws the strand of cotton against the outside of the arm so as to form a bearing all the way down, and when it arrives at the bottom it makes a very abrupt turn and is then wound twice around the presser finger in such short spirals that the centrifugal force has no chance for action to reduce friction.

In the new flyer this is overcome to a great extent; the roving enters the short hollow arm, then out upon the presser, around which it is wound twice, then down until it reaches the foot, where it makes a very easy turn to the bobbin. The action of centrifugal force upon the roving when it is upon the presser arm tends to relieve the friction, which it does to a certain extent. This enables the making of very soft and even roving.

This reduction of friction is so noticeable that a change has to be made in the location of the cone belt towards the small end of the driven cone, as the bobbin must be driven faster to take up the slack in the roving, which was taken care of before by so much surface contact on the old form of flyer. Also, a change of three or four teeth in the tension gear has to be made at the same time, so as to move the cone belt a less distance at each change of the rail.

The reason for the change in the tension gear is that the roving being delivered to the bobbin in a softer condition, the layers are flattened to a more elliptical form, which enables more layers to be placed upon the bobbin in a given diameter. To illustrate this, you will take two strings and twist them together, then pull at each end, and you will notice that the strain has a tendency to set the twist and make the string hard, which will retain its roundness, but apply less strain, it will be softer and allow of compression. The present form of flyer applies this strain and sets the twist, while in the new one there being less friction, therefore less strain, the roving is delivered to the bobbin in a softer and more even condition.

Increased production is the result with these new flyers from this feature alone, while they being 25 per cent. lighter and supplied with short arms which do not spread, enables the speed to be increased from 10 to 15 per cent. without material increase in power or repairs.

In regard to the spreading of the arms, it does not occur in most mills, and why? Ask any mill superintendent or overseer how their flyers are running, and the answer is almost invariably, "All right. No bother at all; once in a while a presser gets knocked off or broken, but otherwise all right." The reason for this answer is this: the machine builders and cotton manufacturers know from experience at what speed flyers can be successfully run so as to give the maximum production at minimum repairs, but you will find that at the speed the frames are now running, the bill for pressers being knocked off amounts to quite an item at the end of the year.

In the new flyer the arms do not spread, and consequently the pressers

do not strike adjacent flyers, which means a reduction in repairs at that point. Increased diameter of bobbin can also be obtained on the same spaced frame, which will lengthen the time between doffs; also, the help claim where these flyers are being used, that they are easier to handle and piece up.

The evolution of this form of flyer from its conception has been about the same as all other inventions of merit: the inventor did not have the means to push it and was afraid of losing it, so that it slept for a number of years, until the attention of the writer was called to it.

Shortly afterwards the writer obtained control of the patent and entered upon its development. Since then it has been improved and brought to a practical form, so that it is now ready for use. The skill required in the construction of flyers is such that the building of them has become a specialty in that branch of mechanics devoted to the manufacture of cotton machinery; so much so that they are only successfully made by firms devoted to the building of them exclusively. They require the closest attention to the minute details, so that the one thousandth flyer will be just the same in every respect as the first one.

If they do not receive this attention, when they are placed upon the fly frames a decided difference at individual spindles will be noticed. This skill is such that it is only acquired after years of practice. One large builder of flyers told the writer that there were forty-three operations in the process of making their flyers, and that they did not have a man in their employ who could build a complete flyer; but each man was an expert at the particular operation that he was on, and that they had to make their men, as it were, to fill the places.

As I said at the first, the flyer is a small thing in itself, but when looked at from every point of view it increases in size and importance. Although it now fills its place without much complaint, this is no reason why it always should remain without improvement. In this age of progress it is bound to come, not only in flyers alone, but in every other branch as well.

Robert C. Webster, Boston, Mass., then read an article on Knots and Knot Tying, in which he called attention to the great superiority of machine tied over hand tied knots, and illustrated his remarks with cuts of knots tied by the Barber knotter, and others tied by hand.

The next paper was entitled Thread Boards and Guides for Wet Spinning, by Lewis T. Houghton of Worcester, Mass. This interesting paper will be published complete with illustrations in next issue.

THE WHITTUM METALLIC THREAD BOARD.

Richard Thackeray, Fall River, Mass.

I will just draw your attention to the construction, lifting and dropping devices of the Whittum thread board, also the manner in which the thread guide is held; the board is made entirely of steel, and the plates or metal blocks are so formed that they hinge upon a nine-sixteenths inch round rod, and can be turned up or dropped down.

The turning down of the board is accomplished by a very clever and simple little device which can never get out of order, and the catch cannot be knocked out, thereby letting the board down while the frame is running, as the whole board has to be raised up before the catch can become disengaged and the board dropped down.

Dropping the thread board instead of raising it while doffing, is practically a new idea, and it gives the doffer a clear view of what he is doing, as the threads are carried away from the top of the bobbin, and the doffer can take hold of the bobbin farther down than he could if the board was turned up. This, as you

are all well aware, tends to decrease the liability of pulling the yarn over the end of the bobbin, or, as the spinner would say, making snotty-nose bobbins, which means a saving of waste.

When the board is dropped down and away from the top of the bobbin, and when the bobbin is raised from the spindle in the act of doffing, it leaves just one turn of yarn at the base of the spindle, and placing the empty bobbin on the spindle binds the turn there, and when the bobbin is again raised in the process of doffing, then that turn comes off with it and a new turn is laid on in the same place.

In so removing the turn of yarn that is laid on the spindle in the act of doffing, there can be no waste left on the spindle to get inside of the bobbin to hold it up and also making waste, as is the case when the board is raised for doffing. By throwing the catch out, the board can be raised up the same as any ordinary board.

The manner in which the thread guide is fastened is very simple, as the underneath plate that helps form the hinge is fastened to the top plate by means of a slotted screw, and tightening the screw clamps the guide wire securely against the top plate, and owing to the peculiar construction of the underneath plates the guide wire cannot possibly be moved.

By slackening the screw, the guide may be pushed in, drawn out, or swung around in a lateral motion, which permits the thread guide to be adjusted over the centre of the spindle to a nicety.

Any style of guide wire can be used with equal facility as the one shown in the model, but your attention is especially drawn to the one used.

By constructing this thread board entirely of steel, a perfectly straight board is obtained, and all tendency to twist and warp, as is the case where a wooden strip is used, is entirely overcome, and no trouble whatever is found in setting the guide wire a uniform distance from the point of the spindle. This thread board can be furnished and put on to spinning frames or twisters.

At the Thursday morning session, the first paper was, A New Combing Machine, by Joseph Nasmith, Manchester, England. This combing machine, for which Mr. Stephen C. Lowe, Boston, Mass., is the American agent, has recently been placed on the American market, and a detailed description appeared in the April issue of the Textile World.

John O. DeWolf, Boston, Mass., then read a paper entitled, An Electric Driven Cotton Mill. This was followed by the reading of the paper on The Electric Drive at the Columbia Cotton Mills, by W. B. Smith-Whaley.

The business transacted at the Thursday afternoon session was the election of officers, which resulted as follows:

President, Charles H. Fish, agent Cocheco Mills, Dover, N. H.; vice-presidents, Herbert E. Walmsley, agent Wamsutta Mills, New Bedford; Alfred E. Adams, agent Whitinsville, Mass., cotton mills; directors for three years, William D. Parnell, agent Hill Manufacturing Company, Lewiston, Me.; J. R. Montgomery, Windsor Locks, Conn.; for one year, James R. McCall, treasurer of Lorraine Manufacturing Company, Pawtucket, R. I.

The election of new members then followed and resulted as follows:

E. Enos Bean, Supt. Millville Mfg. Co., Millville, N. J.; George T. Briggs, Vice-Pres. and Gen. Mgr., The Briggs Mfg. Co., Voluntown, Conn.; Lyman M. Cousins, Pres. Dana Warp Mills, Portland, Me.; Richard Cowell, Supt. Boott Cotton Mills, 25 Read St., Lowell, Mass.; William H. Bilbrough, Gen. Mgr. Elmira Knitting Mills and Mgr. Conewawah Spinning Co., Elmira, N. Y.; Harry K. Drew, Supt. Clinton Mfg. Co., Woonsocket, R. I.; Frank J. Dutcher, Pres. Shaw Stocking Co., Hopedale, Mass.; D. A. Everly, Cotton Mfr., Pawtucket, R. I.; Otto Goetze, Partner and Gen. Mgr. Glasgow Mills, Philadelphia, Pa.; Ernest L. Hill, Vice-Pres. Renfrew Mfg. Co., 320 Broadway, N. Y. City; William H. Hill, Pres. Windsor Co. and Pres. Renfrew Mfg. Co., 40 Water St., Boston, Mass.; William Henry Hobbs, Asst. Supt. Johnson & Johnson Co., New Brunswick, N. J.; Edward W. Houghton, Supt. Globe Mill, Woonsocket, R. I.; William

N. Kimball, Supt. Social and Nourse Mills, Manville Co., Woonsocket, R. I.; Emil Kipper, Treas. Renfrew Mfg. Co. and Windsor Print Works, Adams, Mass.; Calvin H. Lee, Supt. Readville Cotton Mills, Hyde Park, Mass.; Charles F. Libby, Supt. Shaw Stocking Co., Lowell, Mass.; Joseph Mercer, Agt. and Treas. Willimantic Cotton Mills Co., Willimantic, Conn.; George B. Morison, Pres. Ballou Yarn Co., 78 Chauncy St., Boston, Mass.; George E. Prest, Supt. No. 1 Harmony Mill, Cohoes, N. Y.; Harry B. Prest, Asst. Supt. Harmony Mills, Cohoes, N. Y.; John W. Ransbottom, Supt. Samoset Co., Valley Falls, R. I.; John Bion Richards, Treas. Davis Mill, Fall River, Mass.; William H. Robinson, Supt. No. 3 Harmony Mill, Cohoes, N. Y.; Alfred Sagar, Supt. Arlington Cotton Mills, 15 High st., Methuen, Mass.; Albion K. Searle, Supt. Ogden Mill (Harmony Mills), Cohoes, N. Y.; Alphonso F. White, Supt. Forestdale Mfg. Co., Forestdale, R. I.; George A. Wies, Treas. Eureka Fire Hose Co., 13 Barclay St., New York City; William E. Winchester, Teacher of Cotton Carding and Spinning, Philadelphia Textile School, Broad and Pine Sts., Philadelphia, Pa.

ASSOCIATE MEMBERSHIP.

Samuel M. Green, Architect and Mechanical Engineer, American Thread Co., Holyoke, Mass.; Edwin Farnham Greene, Pres. Lockwood, Greene & Co., 93 Federal St., Boston, Mass.; Frederic W. Howe, Sales Manager, Crompton & Knowles Loom Works, Box 899, Providence, R. I.; Daniel Jackson, Cotton Buyer B. B. & R. Knight, Providence, R. I.; Sanford E. Loring, Consulting Architect, 104 Everson Building, Syracuse, N. Y.; Percy H. de Mauriac, Cotton Yarn Commission Merchant, 78 Chauncy St., Boston, Mass.; Robert W. Neff, Chemical Mfr., 22 India Square, Boston, Mass.; William F. Parish, Jr., Engineer, Vacuum Oil Co. (Technical Department), 101 Milk St., Boston, Mass.; Richard W. B. Sanderson, of G. S. Lings & Co., Yarn Merchants, P. O. Box 1323, Providence, R. I.; William N. Shaw, Treas. The Geo. W. Stafford Co., Readville, Mass.; George C. Tewksbury, Eastern Mgr., The Underfeed Stoker Co. of America, 721 Exchange Building, Boston, Mass.; Robert C. Webster, Mgr. Barber & Colman, 11 Pemberton Sq., Boston, Mass.; J. F. Warren, Treas. J. F. & W. H. Warren Co., 44 Vine street, Worcester, Mass.

An interesting feature of the afternoon session was the presence of a delegation of English cotton manufacturers, who had arrived the same day from England. The delegation consisted of the following gentlemen: Henry Higson, chairman, Blackburn; Wilkinson Hartley, Nelson; Mitchell Grey, Burnley; D. J. Shackleton, Darwin; J. R. Smith, Preston; D. Pickup Holden, Darwin; John Taylor, Blackburn.

The readers of the Textile World are already familiar with the object of their visit, which is to investigate industrial conditions in the cotton industry of the United States, for the information and guidance of English manufacturers.

The party was met at the boat by a committee from the association, who escorted them to the hall. President Fish introduced Chairman Higson, who delivered a very happy address, in which he spoke of the common bonds joining the people of England and the United States, and said that he and the members of his party were in this country not for the purpose of securing any trade secrets, but to secure information as to general conditions, which are a matter of common knowledge in this country, but which are but imperfectly understood in England.

He stated that they expected to visit the principal cotton manufacturing districts in the United States, both North and South, and were ready to impart any information in their possession regarding conditions in England, as they believed that American manufacturers were as desirous of learning about European conditions, as were Europeans about the conditions in America.

Mr. Higson was enthusiastically applauded, and we trust that the warmth of the greeting extended to his party by those present is an indication of the reception they will receive in visiting the different manufacturing centres of the United States.

As already pointed out in our columns, there is no occasion for our manufacturers to hesitate about imparting the information which these gentlemen desire regarding American manufacturing, and we believe that the exchange of views between them and our manufacturers will result in more benefit to us than to our English friends.

Murray C. Beebe, Pittsburg, Pa., then read a very interesting paper on the Nernst Lamp in Industrial Establishments. The lecture was illustrated by the stereopticon; the hall had been

equipped with the Nernst Lamp, and an actual comparison was made between the old and new method of electric lighting. The superiority of the new light was apparent. The effect of the Nernst and the ordinary light on different colors was also shown. The current consumed for each light was indicated by instruments within the sight of all present, so that there could be no doubt as to the superiority and economy of the Nernst lamp.

Then followed papers on Viscose, by Charles N. Waite of Philadelphia, and Japanese Cotton Mills, by Tetsutaro Inumaru of Japan.

Upon the conclusion of the reading of these papers the meeting adjourned.

It was with regret that we noted among the convention notes of a weekly contemporary, a flippant allusion to the respected ex-president of the association, Mr. D. M. Thompson. Knowing the kindly spirit of the publishers of that journal, we ascribe its reporter's story to an ill-judged attempt to be humorous in describing a simple incident, which proved to be wholly unfounded. He evidently mistook the man, but Mr. Thompson is, however, too widely known and respected in cotton mill circles to allow such a jest to pass unnoticed and unrebuked. His many friends know that the impression which might be conveyed to a stranger is wholly at variance with his personality, and with the long and honorable career which has won for him the prominent position he holds in manufacturing and business circles, and naturally feel indignant at the incident.

Seasonable Fabrics.

Men's Wear Woolens. The market on men's wear woolens, and particularly the wholesale clothing trade, has been in a most uncertain and unsatisfactory condition for the past few weeks owing to the trouble which the American Woolen Co.'s mills are experiencing. These labor troubles come at a most unfortunate time for the wholesale clothing trade, as it renders it extremely difficult for the manufacturers to get out their lines of fall samples, and the result is that their business will be greatly delayed.

The official announcement of the American Woolen Co. contains very little comfort to those of their customers who had already placed their orders; and who were depending upon receiving their goods at the usual time. The announcement referred to follows: "As you are probably aware, the weavers of all our mills making fancy worsteds (with the exception of the D. T. & Y.) are now on strike. The recent additions to the list of mills affected have so upset our calculations that our estimates of the delivery of sample pieces are entirely disarranged. While your orders may be well along in the process of weaving, you will appreciate that under the present conditions, we can, with no certainty agree to finish and deliver them. We must, therefore, inform you of an indefinite delay which is entirely beyond our control."

This statement is certainly a very frank one and gives the customer a precise knowledge of the situation so far as he is concerned, and enables him to make whatever arrangement he can for substituting elsewhere. Buyers have consequently been engaged in a thorough search of the market for satisfactory substitutes, and in many cases have been obliged to pay higher prices for fair substitutes, and even inferior qualities have been purchased at the highest ruling prices.

But aside from covering their actual wants for the immediate present, buyers have displayed no disposition to speculate and apparently many are still hoping and trusting that their original orders placed with the American Woolen Co. will be filled in due time.

Business with the independent mills

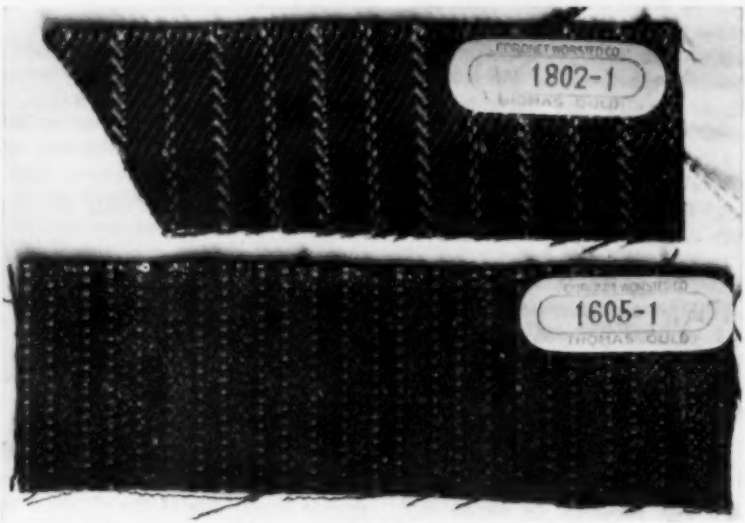
has, of course, been unusually good and many of them are running over time. The situation comes as a boom to some of the smaller independent manufacturers who had not booked as much business early in the season as they desired, but who are now enabled to sell up their entire production at favorable prices. Advances, however, have been made in as many cases as might naturally have been looked for.

Business on overcoatings has been comparatively quiet and although some of the wholesale manufacturers are now showing fairly complete lines of winter garments, the majority will be unprepared to go out after business for some time to come.

Preparations are under way for light weights for the coming spring season, but as yet little can be said of the tendency of styles. We present herewith two styles from the fall line of one of the independent mills whose line has been very successful. The Coronet Worsted Co., Oakland, R. I., 1802-1 at $1.75, and 1605-1 at $1.95.

Woolen Dress Goods. While fair sized orders have already been placed for fall, it is evident that a large part of the business remains to be done. The weather of the past few weeks has been unfavorable for spring business, and the buyer seeing so little merchandise moving out, does not feel inclined to speculate heavily for fall.

Thin, sheer goods of every description such as mistrals, veilings, etamines, canvas cloths, etc., have been in better demand than any other class of dress goods, and it is also on goods of this description that the greater amount of business for fall has been placed.



From observation of collections of foreign dress goods samples, there is no doubt whatever but that this is the class of goods which will be more in popular favor than any other, and the domestic manufacturers are following the lead of their French competitors in this direction.

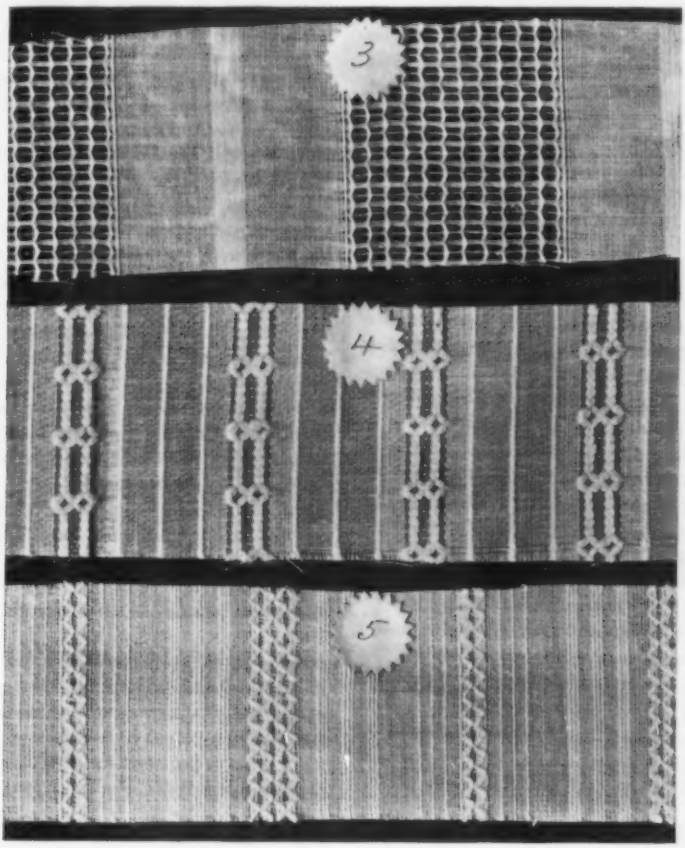
Fancy waistings are receiving a fair share of attention for fall and it is evident that they will again be in good demand, although there were those who prophesied that waistings would be looked upon with scant

favor for the fall season. Persian effects in stripes have, so far, been the better sellers.

Very little has been done, as yet, in the way of heavy skirtings for fall, and it will be some little time before these goods receive much attention. Practically the same classes of goods will be shown as were sold last season, with the tendency toward goods of a slightly lighter weight. Cheviots are still and will continue to be one of the strong leaders.

Cotton Goods. The tone of the market on leading lines of prints and staple cotton goods has been very steady with a slight upward tendency. The reorder business has been very satisfactory and some lines of goods are very scarce and hard to procure.

The gingham market has not been so short for years as this particular season, and leading lines are sold up far into the season. Very little has been offered in any direction in the way of "drives" or "bargains," and this in itself at this late date is an indication that the market is in a clean and healthy condition.



Thin, sheer goods of every description are much asked for and are difficult to procure in satisfactory quantities. One of the most successful fabrics of this description was made and sold by the Arnold Print Works at 10½ cents less 10 per cent. and 5 per cent., one style of which is shown at Fig. 3. The fabric is a thin, sheer cloth with alternating stripes of lat-

tice work with a lace over pattern of serpentine design in white.

For excellence of design and perfect execution, too much cannot be said of the printed batiste of the Pacific Mills. This cloth was a very successful seller at 7½ cents net.

The Egyptian Tissue of the Lorraine Mfg. Co., illustrated at Fig. 4, has also been one of the pronounced successes of the season at 18 cents, as well as the thin striped zephyr sold by Boessneck, Broessel & Co. at 14½ cents, one of the best styles of which is shown in Fig. 5.

Another successful fabric which is worthy of mention is the mercerized Oxford produced by the Aberfoyle Mfg. Co., and sold by their agents, Galey & Lord, at 35 cents less 5 per cent.

Linings. No developments of any consequence have been noted in the lining market during the past few days, and the demand has been confined to orders for goods to meet current requirements.

Owing to the strike in the mills of the American Woolen Co., the clothing trade has been very badly handicapped, and, on account of the uncertainty of the delivery of goods, few advance orders are being placed for linings by the manufacturing trade.

The demand for staple kid finished cambrics has been about up to the average, and prices remain firm on a basis of 3⅞ cents to 4 cents for 64's. The competition has been keener on highly finished goods and mercerized effects than on any other class of linings.

The market for silesias and black and colored percalines continues steady with a fair demand. The condition of the woolen goods market has had a bad effect on the demand for cotton Italians, twills, serges and similar goods, which are largely consumed by the clothing trade, and the volume of business coming forward on goods of this character has been exceedingly small. Linen canvas and paddings are also a drug on the market and in small demand.

There has been, for some time, a tendency towards a return to fancy linings and some very neat and effective designs have been produced.

Silks. The silk market has been fairly active and stocks at hand for immediate distribution are, as a rule, smaller than usual. Taffetas, more particularly in shades of navy, have been in extremely strong demand.

A strong feature of the market for the past few weeks has been the almost unprecedented demand for black and colored moired velours and moired gros grains. The few concerns who are equipped with moireing machines have been rushed to their utmost capacity and cannot begin to keep up with their orders.

In moire velours the popular sellers have been goods ranging in price from 67½ cents to $1.00, with a strong preference for blacks. In thinner light weight weaves, goods on the pongee and shantung order have been in demand as well as open work canvas weaves. In point of popularity the linen shade undoubtedly holds first place on the color card and everything of this description has been readily marketed.

A considerable amount of business has been already booked for fall delivery, more particularly on such staples as taffetas, peau de soies, peau de cygnes and it is noted that prices are slightly in advance of those of last season, the advance being not more than from 3 per cent. to 5 per cent.

Some manufacturers are already out with their collection of fancies for fall, but little business has, as yet, been done along this line, buyers seeming to prefer a waiting policy in order to ascertain the tendency of styles. Velvets have also been well received and large orders have been placed for fall. All pile fabrics, such as the panne velvet, will also be good.

Printed foulards and satin liberties have been a drug on the market and prices are being slashed right and left.

The retailers opened up their goods almost at midwinter, with the result that foulards were an old story when the spring season opened, and not being as quickly picked up as had been expected, the knife was put into the prices and stocks were moved at any cost. The manufacturers and jobbers who had stocks on hand followed the same line of action, with the result that the market on prints was almost completely demoralized.

How to Improve the Textile World.

A successful journal, whether a trade publication or a daily paper, is one which furnishes to its readers the matter that they want, not what the publishers think they want. Sometimes what the publishers think they want is what they do want. Sometimes it isn't.

The Textile World is a successful publication and, therefore, presumably furnishes its readers what pleases them. It receives many complimentary letters and few complaints. Its subscription list is constantly increasing, and most satisfactory of all, the percentage of renewals is very large, in spite of the fact that unlike most trade papers, we discontinue the magazine when the term is up, unless renewed.

But there is room for improvement, and in the hope of obtaining helpful suggestions from our subscribers, we offer the following prizes:

1st Prize. $15.00 for the best letter containing practical suggestions for improvement of the Textile World.

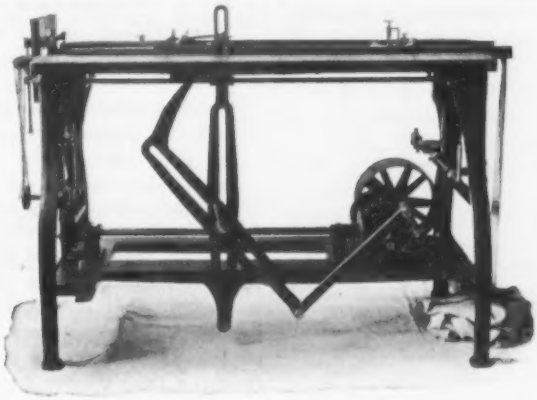
2d Prize. $10.00 for the second best letter.

3d Prize. $5.00 for the third best letter.

The letters must be received before June 20th. The publisher and the editor will be the judges. We should also be glad to have comments from readers as to what features interest them most and what the least.

An Automatic Rib and Top Cutter.

The accompanying illustration shows the Adams automatic rib and top cutting machine, which is now offered to the trade after being perfected by the well known knitting machinery builders, the McMichael & Wildman Manufacturing Company, Norristown, Pa.



AN AUTOMATIC RIB AND TOP CUTTER.

This machine cuts all fabrics with or without welts, doing perfectly clean work, requiring no trimming after having once passed through the machine. Its labor saving qualities are demonstrated by the claim that it will cut 1500 dozen pieces per day, requiring but one operator. Unevenness in the knit fabrics is rectified and false welts are cut out automatically.

Owing to the automatic principle of

the machine and the simplicity of all the parts, we are informed that it is unnecessary to employ skilled help to operate it; a boy or girl answers all purposes.

It is solidly built, free from intricate mechanisms; all the movements are positive; the best materials are employed throughout, and the cutting and working parts are made of hardened steel. The builders claim that one of these machines will save manufacturers $16.00 per day, as compared with the processes now in use.

This machine is in operation in the Globe Knitting Mills, Norristown, Pa., where it is stated to be giving entire satisfaction, and more than fulfilling the promises made for it. Further information can be obtained upon application to the sole builders, the McMichael & Wildman Manufacturing Company, Norristown, Pa.

Ball Bearing Factory Fans.

Every manufacturer looks forward to the difficulty during the summer season of keeping the help at work, owing to the depressing effect of the hot weather. All are familiar with the loss of production due to the operatives leaving their work at this time. This is owing in great measure to the unnecessarily uncomfortable conditions inside the mill walls, caused by heat and lack of proper ventilation.

The Manhattan Machine Supply Co. believe that they have contributed to the solution of this difficulty by placing on the market their ball bearing factory fan, which is mounted on the ceiling, and can thus be placed in any factory building. They state that the fans are a perpetual fresh air excursion, and are able to refer to many of their customers as to the satisfactory

During May and June, 1901, they fitted up about 200 factories in various parts of the country with this new fan, and in many instances duplicate orders were received during the same season, the best evidence that can be offered as to the practicability of this system.

To enable customers to properly place their orders, the different sizes have been numbered, and are suitable for ceilings from 8 to 12 feet in height.

The following table gives the fan number and sizes of hangers to correspond:—

FAN NO.	CEILING.	HANGERS.	LENGTH OF ¾ SHAFTING.	EXTREME DROP OF FAN FROM CEILING.
	FT. IN.	IN.	IN.	IN.
1	8 0	9½	6¼	12
2	8 6	12½	11	16½
3	9 0	16½	15¼	21
4	9 6	20½	20	25½
5	10 0	25½	24¼	30
6	10 6	29½	29	34½
7	11 0	34	33¼	39
8	12 0	42	41¼	47

This method of factory ventilation has as yet been adopted by but a comparatively small number of mills, but we believe that it will become more popular as manufacturers become better acquainted with the great benefits resulting from its use during the hot season.

Further particulars will be supplied upon application to the Manhattan Machine Supply Co., 106 Grand St., New York, N. Y.

Mill Sewing Machine.

The advantage of joining the ends of pieces by a sewing machine in the process of finishing are so great and so well recognized that reference to them here is not required. Mill sewing machines are indispensable, and the only question to be decided by manufacturers is, what machine is best suited to the purpose.

The Dinsmore Manufacturing Co., Salem, Mass., offer an extensive line of this machinery adapted to all classes of textile fabrics. They claim

that with their sewing machines the cloth can be stretched so that it remains as wide at the seam as elsewhere in the piece, preventing wrinkles and narrowing at the ends, and enabling the cloth to be finished with a minimum amount of waste.

Their railway machines are so arranged that the two ends of the cloth are fastened to the machine, and the goods stretched all they will stand before the sewing is begun. This leaves the cloth wider at the seam than elsewhere and allows for contraction. It is stated that woolen cloth sewed on the Dinsmore machine can be finished within one inch of the end.

The rotary machines are for continuously sewing, the cloth being stretched by the operator.

Following is a brief description of the various types of sewing machines built by this company:

The hand-power portable railway sewing machine is designed for moving about the room where it is not practicable to use a power machine at the shears, gigs, calendars, drying machines, etc. The machines are built in different lengths to sew any width of cloth, and will handle wet or dry, thick or thin goods.

The belt-power railway sewing machine is built on the same principle as the hand-power machine, and is especially useful in cloth rooms where the goods pass in straight lines for long distances and must be sewed together to make the piece continuous. This style of machine is also built to be fastened to calendars or other finishing machines, or to benches.

The opening and winding railway sewing machine receives the cloth from the loom, and winds, sews, and rewinds the goods into rolls of 3000 yards or less. It keeps the cloth clean and free from wrinkles, makes a hard straight roll for the shears, brushing machines, or for shipment. A measuring attachment, and an inspecting board is furnished with this machine, if desired. An extra heavy machine with trimming attachment is made for this opening and winding device, where heavy work is handled.

Where the floor space is fully occupied, and the portable machines cannot be used, the Dinsmore Company build machines to be suspended from the ceiling.

The rotary sewing, trimming and marking machine is capable of 2000 stitches per minute; trims the margin of the cloth outside the seam, which will pass through the shears without raising the blades. It can be used on "backs" or "backs grays" without leaving a "mark" or "print in the gray." It is stated that the margin does not curl up and make a hard lump to spoil many rolls of cloth that pass through the following processes.

With the power circular sewing machine the cloth is fastened to adjustable points in the rim, which revolves, carrying the cloth through the sewing machine, sewing it at the same time. It is especially adapted for the gray room in bleacheries, bag factories, etc.

The foot-power portable rotary sewing machine is designed for moving about where it is not practical to use the power machine. The cloth is stretched to a large feed wheel by the operator, and a device is provided for preventing the breakage of needles for making long or short stitches. This type of sewing machine is also built to be operated by belt power.

The foot-power post sewing machine is for use as a printing machine in print works. It is attached to a post in a convenient position for operating. An inspecting and measuring machine is constructed so that the operator can examine the cloth readily as it passes; by means of an inclined table the measured rolls and dial lengths are indicated.

Further information regarding these many sewing devices can be obtained upon application to the builders, the Dinsmore Manufacturing Co., Salem, Mass.

Nappers for Woolen and Cotton Goods.

The Parks & Woolson Machine Co., Springfield, Vt., are bringing out an improved napper, which is built for either woolen or cotton goods.

Among the claims made for this machine particular attention is called to the following: There are sixteen workers, being two more than has heretofore been used; there are five contacts of the cloth, being one more than heretofore; the adjustable cloth feed and cloth contact, both of which are regulated by one hand wheel.

The chief feature is its adaptability for all grades of goods, the adjustment permitting of such a wide range of regulation that it is possible to finish on one machine all grades of fancy cassimeres, beavers, kerseys, broadcloths, blankets, dress goods, cheviots, satinets, felts, etc., including cotton as well as woolen fabrics.

THE PARKS AND WOOLSON WOOLEN NAPPER.

Owing to the increase in the number of workers and contacts, it is claimed that an increase of from 25 to 50 per cent. in production is secured. A slow running internal gear, geared on the outside, drives the six-

teen workers. This internal gear runs at about 1/5 of the speed of an external gear, meshing on the inside of the worker gears. It is claimed that a great saving in power is thus effected, as well as wear and vibration prevented.

Particular attention has been paid to the device for regulating the energy of the machine, which is said to be capable of such fine adjustment that no complaint can be made by finishers on this point. The cloth feed is positive, being driven by chain and gear, and can be varied by degrees of ten to twenty yards per minute. This feature is a valuable one, enabling the highest possible energies to be used by speeding up the cloth; thus the same finish is secured as if the speed of the workers had been altered, while at the same time increased production results from the increase in speed.

All of the contacts are adjusted simultaneously by one hand wheel, which can be operated while the machine is running. A graduated dial indicates the exact setting, and accurate records of any finish can thus be made.

The brush, which is 16 1/2 inches in diameter, runs at a very high speed, and is covered with the best quality of wire clothing. This makes a very effective brushing device, which is an important point in napping. A large stretcher roll operates on the back of the cloth, which is delivered to the cylinder up to width and free from wrinkles. The application rolls are covered with brass, so that no rust can accumulate and spot the goods. The workers are self oiling. Any style of napper clothing is furnished with these machines to suit the particular class of goods to be finished. All the gears are carefully protected by a covering that can be easily removed, if required.

The accompanying illustration shows a machine adapted for woolen goods, but the napper is built for cotton goods as well. Many of them are in use, and the builders will send further information upon application.

Power Wasted by Tight Belts.

The waste of power due to tight belts was recently demonstrated in a most striking way by Hubert E. Collins, of Astoria, New York, a mechanical engineer, in a series of tests made in the silk mill of M. C. Migel & Co., Woolsey and Van Alst avenues, Long Island City, N. Y. The accompanying table gives the results of his experiments. Mr. Collins says:—

SPEEDS OF SHAFTS AND FRICTION LOAD TAKEN IN SILK MILL OF M. C. MIGEL & CO., (Cor. Van Alst and Woolsey Avenue, Astoria, N. Y.)

SHAFTS.	Speed Sept. 7, 1901. Before Cling-Surface was used.	Speed Oct. 24, 1901. With 60% more load than when speed was taken Sept. 7, 47 days after C. S. was first applied	GAIN.
Main	160 rev. p. m.	160 rev. p. m.	rev. p. m.
No. 1 South	155 " " "	154 " " "	3 " " "
" 2 "	155 " " "	159 " " "	4 " " "
" 3 " East	158 " " "	159 " " "	1 " " "
" 3 " West	155 " " "	159 " " "	4 " " "
" 4 " East	157 " " "	159 " " "	2 " " "
" 4 " "	154 " " "	159 " " "	5 " " "
" 1 North	147 " " "	152 " " "	5 " " "
" 2 "	147 " " "	150 " " "	3 " " "
" 3 "	151 " " "	151 " " "	* " " "
Friction load	11.+HP	9.+HP	2.+HP

*Belt is badly laced which accounts for no increase.

Last fall I recommended the use of Cling-Surface in the belts of the silk mill of M. C. Migel & Co., Woolsey and

Van Alst avenues, Long Island City, not so much for a belt preservative, but to save power by lessening friction.

As I was working on close margin there to keep the plant running to full speed when the heavier load came on, I gave this work my special attention and secured some interesting results.

I first took speeds of all main shafts and the friction load of engine.

After forty-seven days, during which I applied the Cling-Surface to each belt once a week, I again took speeds of shafts and the friction load of engine, and the following data will show you the success we had.

The results were much better than expected, especially in the friction load, which decreased over 18 per cent.

This saving of 2 H. P., if nothing else, means a saving of at least $100 per year to the firm, which would easily pay the expense several times over of the Cling-Surface used.

With proper attention and a much smaller amount of Cling-Surface each year, the same results should be secured, as my work demonstrates it can be done.

Added to this saving in friction, the value of the product is certainly increased, as the steadier speed of shaftings gives a more uniform tension to the cloth woven and the average output must be larger than when the speed of the engine slowed down so often.

A year ago this plant was running poorly, the engine could not carry the load and the speed was so poor, another boiler was thought of, and I was consulted.

On looking over the plant I saw the worst feature of the trouble was tight belts. After treating the belts I succeeded so well that the new boiler was not needed and the plant has run all this winter without slowing down.

This is a remarkable performance and shows that intelligent use of Cling-Surface will accomplish good results. With proper application Cling-Surface can't help but be of service.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market.

Interested parties are referred to the manufacturers for further information. These items are published without charge and regardless of advertising consideration, the idea being to present to our readers a systematic monthly record of new machinery, etc. of interest to textile mill men.

We invite machine builders and others to send us such information for this department.

Dust Separator. The Hartford Blower Company, 71 Suffield St., Hartford, Conn., are introducing an improved dust separator. This machine has an upper chamber enclosing a special flue, which opens into an interior chamber. In this way, the dust laden air is given a rotary action before being delivered to the chamber. The machine is designed for handling all classes of finely divided materials of moderate weight.

Preservo. The Robeson Chemical Co., 929 Military St., Port Huron, Mich., are placing on the market a compound for rendering cotton duck waterproof and make it suitable for machinery covering. The makers claim that this composition contains no oil, that it renders cotton duck much softer or pliable than before treatment, while increasing the strength and durability of the fibres. It is said to be a perfect protection from rot, mildew, water and frost.

Rib and Top Cutting Machine. The McMichael & Wildman Manufacturing Company, Norristown, Pa., are placing on the market the Adams rib and top cutting machine for knit fabrics.

a description of which appears in another part of this issue.

Lace Machine for Seamless Hosiery. The American Knitting Machine Co., Knickerbocker Building, Sixth and Arch Sts., Philadelphia, Pa., are putting on the market a new machine for producing lace effects in seamless hosiery. This is designed to meet the demands for this popular class of fabrics, and permits a range which gives full scope to the ingenuity of the designer.

Combination Lace and Stripe Machine. The American Knitting Machine Co., Knickerbocker Building, Sixth and Arch Sts., Philadelphia, are putting on the market a new machine for combination lace and stripe effect in seamless hosiery. This makes a striped stocking with lace openwork. It is simple in construction and operation. The special feature in connection with it is the ease and facility by which a pattern is changed.

Thread Board with Porcelain Guide for Wet Twisting. L. T. Houghton, Worcester, Mass., has adapted his metallic thread board, which he has been successfully introducing to manufacturers during the past year, for wet twisting. This special style is made of solid brass and is unaffected by the action of water and practically indestructible. The guide proper is made from hard porcelain and so arranged that it can be easily and cheaply renewed when worn. The thread slot is tangent to the thread eye, which holds the thread in its place. The Houghton system of thread boards permits of perfect adjustment of the guide.

Cotton Card. John Hetherington & Sons, Ltd., Manchester, England, have remodeled their cotton card, and have styled the new machine, the "New Century." The height of the machine has been reduced, and the space between the chain of flats increased; 112 flats can be used if desired. The feed and division plates have been rearranged to prevent the throwing down of good fibre.

Mercerizing Machine. S. Walker & Co., Boulevard Montebello, Lille, France, are introducing a machine for mercerizing, based on the patents of Maurice Frings. The machine occupies a floor space of nine square feet and, it is claimed, that one operative and a helper on three machines can mercerize 1350 lbs. in 11 hours. One-quarter of a horse power is required. It has been in operation at Lille, for over a year and is now being built for sale.

Cop Tubing Apparatus. Messrs. E. Jagger & Co., Oldham, England, have brought out a device for placing cop tubes on the spindles. It is portable, and can be operated by the youngest hand in a spinning room. The tubes are placed in the apparatus, which is adjustable and fitted to the gauge of the machine; by one quick movement of the operative the tubes are placed in position on the spindles.

Air Moistener. Hall & Kay, Ashton under Lyne, England, are placing on the market an apparatus for moistening air in textile mills. The air is drawn or forced over the surface of water in a tank. Suitable devices are provided for regulating the degree of moisture.

Bobbin Winder. An English firm has brought out a new form of bobbin winder having but one revolving cone regulated by a balance lever. As the yarn is wound, the bobbin rises, being carried on a spindle moving in vertical slides. When the bobbin is full, the lower end of the spindles fall forward and the winding is arrested, the spindle remaining in this position until doffed. Each spindle has a stop-motion which acts immediately upon the breaking or running out of the thread. A compensating motion prevents any strain or jerk on the skeins.

COTTON DEPARTMENT.

Defects in Cotton Yarn and Their Causes.

Every manufacturer knows, writes a correspondent to Oesterreich's *Wollen und Leinen Industrie*, what great difficulties must be overcome and how much attention is required to produce strong, even yarn from the raw cotton furnished to the mill. So many details must be kept in mind that, in spite of the greatest attention, the product often fails to answer the requirements. When defects of any kind are noticed, it is important to find the cause and apply the remedy at once. The following table has been compiled to aid mill managers to determine the causes of the various troubles. It is classified according to the departments of the mill and the different kinds of imperfections:—

UNEVEN YARN.

Mixing. Mixing cotton of unequal length together.

Preparing. Imperfect doubling on the pickers.

Drawing. Leather covering of rolls worn irregularly; Rolls sticking in the bearings; Too much play in the bearings of the rolls; Loose covering on the rolls; Upper and lower rolls not in line with each other; Soft upper roll; Imperfect doubling; Improper setting of the rolls; Too much or too little pressure on the rolls; Weights not hanging free; Saddles pressing against centre of rolls; Excessive draft.

Fly Frames. Imperfect leather rolls; Irregular sizes of rolls; Rolls sticking in the bearings; Too much play in the bearing of the rolls; Leather covering too large for the rolls; Guides obstructed by waste; Rolls with wrong adjustment; Spools out of balance; Upper and lower rolls not in line with each other; Two strands of roving of unequal size running together; Waste on speeder spindles; Too much or too little tension on the roving; Improper winding; Insufficient twist; Excessive draft.

Mule Spinning. Same defects in rolls as with fly frames; Roller laps; Defective piecing; Carriage not in line with roller beam; Too much tension on the yarn when the carriage is coming out; Damp roving; Excessive draft for low numbers.

Ring Spinning. Same defects in rolls as with fly frames; Defective piecing; Travelers too heavy; Damp roving; Excessive draft for low numbers; Spinning high numbers from inferior grades of cotton; Insufficient number of fly frame processes.

NIBBY YARN.

Carding. Setting comb too high; Too large a product.

Drawing. Backlash on the bottom roll; Bent necks on the bottom roll; Creases in the leather covering; Variations in the speed of the machine; Excessive draft; Interruptions in the movement of the upper rolls; Rolls sticking in the bearings; Saddles not right; Rolls set too far apart.

Flyer. Backlash of the bottom roll; Bent necks on the lower roll; Creases in the leather covering; Too much play in the bearings of the gears; Excessive draft; Imperfect bobbins; Imperfect spindles; Waste on spindles; Improper tension on roving; Imperfect winding; Variations in the speed of the machine; Too much twist; Rolls too far apart; Cone belts driving unequally; Imperfect cone belts.

Mule Spinning. Same defects in rolls as with fly frames; Fallers dropping too late or too quick; Rebound of the carriage after striking in.

Ring Spinning. Same defects in rolls

as with flyers; Dwell of the ring rail at its highest point; Defective travelers; Defective rings; Variation of spindles.

TENDER YARN.

Preparing. Cotton injured by the beaters.

Carding. Carded too much.

Drawing. Excessive draft; Excessive pressure.

Fly Frames. Rolls improperly set; Excessive draft; Too much or insufficient twist.

Mule Spinning. Improper setting of the quadrant; Wrong adjustment of the spindle whirl; Loose bands; Faller wires dropping too quick; Carriage moving too quick at the beginning; Upper faller wire rising too slowly; Clutches worn; Improper setting of knock-off levers; Yarn wound too hard on spindles; Faller wires too heavy; Fallers striking on the beaters; Too much strain on the yarn; Winding chicks worn; Friction working irregularly.

Ring Spinning. Imperfect travelers; Rings set improperly in ring rail; Thread guide not exactly over spindle; Waste on travelers.

FUZZY YARN.

Mixing. Short, dead and otherwise imperfect fibres in the cotton.

Drawing. Feed too heavy; Fibres not laid parallel; Improper setting of rolls; Roller laps; Rolls not properly oiled; Loose roll covering.

Flyer. Too little twist; Rolls set too far apart; Loose roll covering; Too much strain on the yarn; Rolls improperly oiled; Defective winding; Roller laps.

Mule Spinning. Same defects in the rolls as with fly frames; Too much tension on the yarn; Imperfect wire used for fallers; Rolls not properly oiled; Vibration of the spindles.

Ring Spinning. Same defects in the rolls as with flyers; Rings too large; Ballooning of the thread; Too much strain on the yarn; Rolls not well oiled.

TWITTY AND BRITTLE YARN.

Mixing. Improper mixing.

Drawing. Too much weight on the top roll; Dirty rolls; Rough top roll.

Fly Frames. Rolls set improperly; Dirty leather rolls; Rough top roll; Flyers and pressers not kept clean.

Mule Spinning. Same defects in the rolls as with fly frames; Old roving twisted too hard; Too much tension on the yarn; Heavy roving; Excessive draft; Air in the spinning room too dry.

Ring Spinning. Same defects in the rolls as with fly frames; Travelers too heavy; Rings worn; Imperfect travelers; Air too dry in the spinning room.

SOFT, DOZY YARN.

Mixing. Improper mixing; Too much tender stock used for warp.

Preparing. Too much waste in the stock.

Drawing. Drawing rolls not kept clean.

Mule Spinning. Air too moist in the spinning room.

Ring Spinning. Air too moist in the spinning room.

KINKY YARN.

Drawing. Rolls set too close; Imperfect adjustment of saddles; Loose roll covering.

Mule Spinning. Too much twist; Too little strain on the yarn in drawing; Spindles set too low; Spindles out of line; Carriage not in line with roller beam; Faller wires out of line.

Ring Spinning. Travelers too light; Too much twist.

HARD, INELASTIC YARN.

Mixing. Imperfect mixing of different grades.

Preparing. Stock not well opened up.

Carding. Clothing worn out or dull.

Drawing. Insufficient doubling; Too much draft.

Fly Frames. Insufficient doubling.

Mule Spinning. Insufficient doubling; Too much twist.

Ring Spinning. Insufficient doubling; Too much twist.

ROUGH YARN.

Carding. Poor carding; Seeds in the cotton.

Flyer. Rough thread guide.

Mule Spinning. Rough thread guide; Too little strain on the yarn; Yarn drawing off from the spindles at the end of the passage of the carriage outward, caused by improper inclination of the spindles; Too much twist.

Ring Spinning. Travelers too light and speed of the spindles too low; Bobbins too rough at the top; Too much twist.

SOFT TWISTED YARN.

Mule Spinning. Imperfect oiling of spindles; Imperfect spindle bands; Rim bands too loose; Spindles out of line; Waste on spindle bands.

Ring Spinning. Imperfect oiling of the spindles; Imperfect spindle bands; Bobbins loose on the spindles; Ring rail not horizontal; Waste on spindle bands.

DIRTY YARN.

Mixing. Dirty or unripe cotton.

Carding. Insufficient carding.

Drawing. Too much oil; Improper cleaning and neglect to remove waste from the clearers.

Flyer. The use of too much oil; Neglect to clean machine and remove waste from clearers.

Mule Spinning Use of too much oil; Neglect to keep the rolls and other parts of the machine clean.

Ring Spinning. Same causes as in mule spinning.

BADLY WOUND COP YARN.

Mule Spinning. Slipping of belts; Defects in cylinders; Wrong adjustment of quadrant; Spindle steps and bearings worn out; Quadrant chain slack at end of outward passage of carriage; Fallers not weighted heavy enough.

Ring Spinning. Traverse motion working badly; Bobbins loose on the spindles.

Knots and Knot Tying.

By Robert C. Webster, Boston, Mass.

Read at the meeting of the New England Cotton Manufacturers' Association.

The subject of knots and knot tying has been a problem for cotton manufacturers as long as cotton mills have existed. While a comparatively small and unimportant process, the spooling department is probably the source of as much trouble as any department in the mill. A bad knot causes trouble from the warper to the cloth room. Articles almost without number have been written suggesting as many different ways of doing away with the evil.

Many patented and experimental appliances have been put in operation without practical or economical success. These mechanisms have not been successful on account of their being either too costly to operate, or not doing the work properly, the great objection being that the work of the machine was such that no uniformity of length of ends was maintained.

In England, for many years, the manufacturers have claimed to tie weaver's knots. This does not, however, do away with the trouble, as it is as possible to leave a long end to a weaver's knot as it is to a spooler's knot. In the United States some mills have attempted to tie the weaver's knot. However, it is impossible to be sure that the knots are all short end weaver's knots.

Some time ago I was in a mill that claimed to tie weaver's knots exclusively. The superintendent took me to their spooling department, and standing in one corner of the room, we had a good opportunity to watch the spooler tenders.

The girls near us were all tying weaver's knots, but glancing across the room, I saw several girls industriously tying spooler's knots. I called the superintendent's attention to this, and he readily admitted that it was

only while the operatives were being watched that weaver's knots were tied. He said he did claim, though, that by paying the girls more than the other mills paid he was sure that if they did not tie a weaver's knot they would tie a good spooler's knot. He also had a system of marking the work so that he could trace a bad knot back to the girl who tied it.

FIG. 1.

The weaver's knot is slightly smaller, but the great trouble from knots does not come from the knot itself, but from the long ends. Yarn tied with a short end spooler's knot will weave a better piece of cloth than yarn tied with weaver's knots when the ends vary in length.

Some two years ago a device was invented and shortly after marketed, that was intended to do away with bad knots. This machine ties a spooler's knot with short, even ends. Mills that have adopted this machine claim that a saving can be made in the cost of spooling of from ten to twelve per cent. This, however, while a large item, is not the greatest advantage of such a machine. From tests made in a mill, we found that a section beam could be filled from half an hour to an hour sooner than a section beam on which hand-tied work was being run.

The great saving, however, is neither in spooling nor warping, but in the weave room. When a knot with a long end attempts to pass through the reed it almost invariably causes a break and the broken ends become entangled in the threads near it, and often seven or eight ends are broken before the trouble is discovered. Probably more than 95 per cent. of the seconds caused by imperfect knots can

be obviated by the use of proper mechanism.

On the Draper loom from eight to ten minutes per day is required by the weaver in filling a 24-bobbin hopper. With twenty warp-thread breaks per day, estimating the time required to find thread, draw in, and start the loom at one and a quarter minutes, a weaver would be required to give each loom twenty-five minutes per day to tying-in ends and ten minutes per day to fill the hopper, making a total per loom of thirty-five minutes. In a ten-hour day a weaver could thus operate sixteen looms and be employed 560 minutes out of the 600.

By reducing the number of breaks in the loom from twenty per day to five per day, a weaver could increase the number of looms from sixteen to thirty-two. On a plain loom the reduction of warp thread breaks would enable a weaver to increase the number of looms he could take care of, though the increase would not be as great as the figures given above.

Mr. C. H. Draper has given me the following results of a test he made some time ago. The test covered the running of from four to ten looms for two or three months. The total running time, adding up that of each of the looms separately, was 378 days of 10 hours each. The number of warp ends broken was 3641, out of which 1722 were caused by bad knots. In the same time there were 731 stoppages due to slack threads, out of which 486 were due to bad knots.

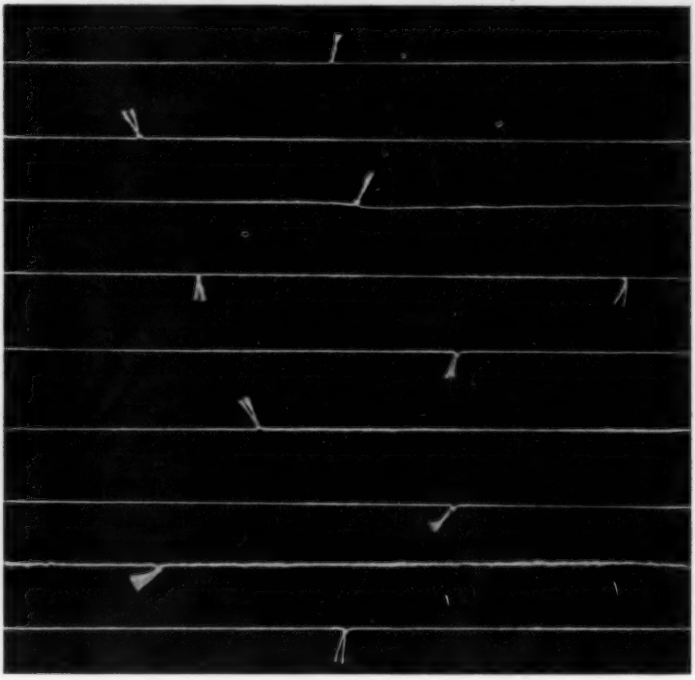


FIG. 2.

From these figures we find that 47 per cent. of warp breaks, 65 per cent. of slack threads, and 50 per cent. of these two faults added together, were due to bad knots. In these tests the looms were equipped with various kinds of mechanical stop motions made by the Draper Company and the

cause of the trouble was in each case accurately noted down on the spot. Most of the slack threads caused by knots, and a large proportion of the warp breaks caused by knots, were due to the long, trailing ends left by the spooler tender.

Cut number one shows some bad knots taken from the warp. Number two illustrates some machine tied knots. The difference is quite apparent.

If this machine will do away with bad knots, the work of the warper can be increased, and the capacity of the weave room increased, and at the same time the number of seconds reduced. As to whether it will do it or not, we will leave for the manufacturers to say.

—Health, like Fortune, withholds her favors from them who abuse her. —Saint-Evremont.

—There is a light favorable for men as well as for pictures.—Theophrastus.

—As authors are enriched, their writings are impoverished.—Berlioz.

—Joys are like game; when we aim from too great a distance, we lose them.—Alphonse Karr.

Plan of a Cotton Spinning Mill.

The following description and illustrations of a cotton spinning mill recently built in Glarus, Germany, will enable our readers to make comparisons between the German plant and the spinning mills in this country.

The building is built on the shed system, the machinery being located on the ground floor, under which is a cellar. Electrical power is used

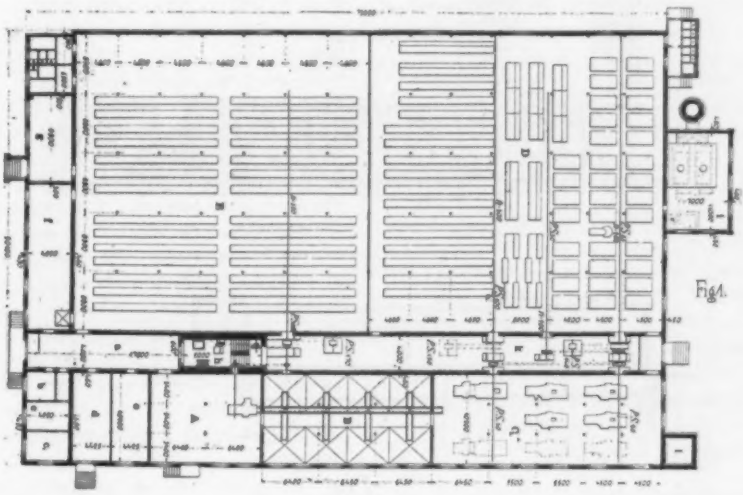


Fig 1.

throughout the plant, which will be equipped at first with 12,032 ring spindles for raw, bleached or dyed cotton yarn from No. 10 to No. 50. The plan is to double the capacity of the mill later; the addition is to be driven by an independent electrical power plant. The generators from which the electric current for this mill is obtained are located at Plans, five miles distant. Three hundred H. P. is required for the present equipment. This power is carried from the motors to the mill shafting by belts.

The different processes are arranged as follows: The cotton in bales is transported from the storehouse by means of a tramway to the room, A, where it is opened and run through the bale breaker, from which it is car-

ried by an apron to the mixing room, B. From this room, it is carried in trucks to the beating room, C, in which is located an opener with an automatic feed, and beaters for cleaning the cotton. Means are provided for blowing the cotton through pipes to and from this room, in case the stock is to be bleached or dyed.

The lattice apron from room, A, extends to room, C, in order to carry the

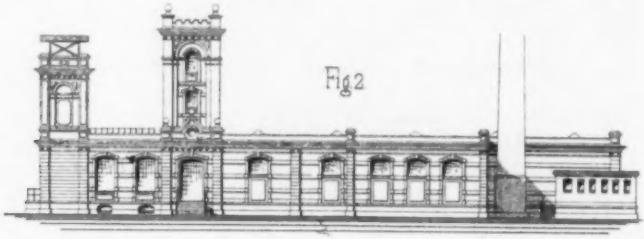


Fig 2

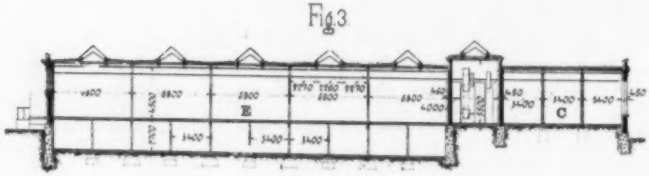


Fig 3

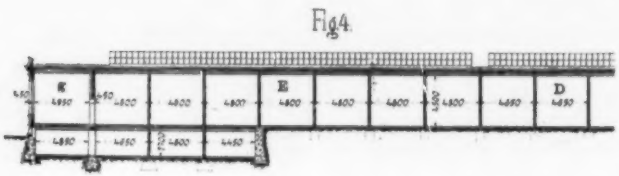


Fig 4

cotton from the bale breaker direct to the feeder, if desired. The opener is provided with a large toothed cylinder with a screen, for the purpose of opening and cleaning the cotton. Four laps from the opener are carried to the apron of the first beater, and four laps from the first beater supply the second beater; on these machines the cotton is again cleaned. The beaters have two steel wings. For the present needs of the mill, one (1) opener, and four (4) beaters are more than sufficient, so that when the capacity of the mill is doubled, only one (1) opener, and two (2) beaters will be added. These last named machines are indicated in the plan by dotted lines.

A sub-cellar is used for collecting the dust, and a tower, 49 feet high, is provided for carrying the dust laden air outside. D is the card room; each card has 104 flat tops, and is operated singly; a doubler is provided so that eventually a part of the work can be doubled. The drawing frames and fliers are located in the same room, D.

The spinning room, E, is separated from the card room by a partition to prevent the dust from flying from one room to another, as well as to enable the temperature and humidity to be better regulated. Of the 28 ring spinning machines at present installed 17 have a spinning gauge of 2½ to 2¾ inches; these are to be used for spinning warp. The other 11 have a gauge of from 1¾ to 2¼ inches, and are for filling. The bleached and dyed

yarn is to be spun on thin paper tubes and sold in this shape.

In addition to the rooms already mentioned, there is a long passage for the motors, shown in the plan; there are also other rooms for officers, dining room and wardrobe for the employees, packing room, repair shop, boiler house and toilet rooms.

The cellar is used for steaming and storing the yarn, and is connected with the packing room by an elevator; a bathroom for the employees is located in this cellar. The mill is heated by steam obtained from a high pressure boiler, which also supplies the steam for steaming the yarn. For heating, the pressure is reduced from 105 to 50 lbs., and carried through pipes suspended 7 feet above the floor, and the condensed water from these steam pipes is collected by a trap and used for the supply of the boiler.

Nineteen air moisteners, system Mertz, have been installed. Sixteen of these are in the spinning room, E, above the spinning machines; three are in the card room, D, over the fliers. On the outside wall of the last named room are two openings, which serve for ventilating the rooms, E and D, and through which the impure and dust laden air is carried from the rooms, E and D, to the outside of the building.

Fresh air is supplied to the spinning room, E, by an adjustable ventilator located on the roof. In the partition between E and D, are openings to allow the passage of the hot air from the spinning room into the card room. In this manner, the air in both rooms is renewed 2½ times per hour, thus aiding the spinning process as well as contributing to the comfort of the operatives.

For lighting, 250 incandescent and 2 arc lights are used. Water for drinking and washing is pumped from a neighboring well into an iron tank, 25 feet above the spinning room floor.

Fig. 1 is a ground plan showing the arrangement of the rooms and location of the machines. Fig. 2, an elevation; Figs. 3 and 4 are sectional plans. The dimensions are indicated by the metric system.

Power Required for Spinning Cotton.

BENNO NEISS,
In Leipziger Monatschrift.

Some years ago the writer published the following table giving the results of tests made in four cotton yarn mills in Germany and Austria to determine the power required for such mills:

INDICATED H. P. PER 1000 SPINDLES.	SPINDLES PER INDICATED H. P.
29.7	33.7
28.8	34.7
28.8	34.7
27.2	36.8
Ave'ge, 28.6	35.0

The English machine builders publish tables giving the power required for the various machines. When, however, the power for a complete spinning plant, including the necessary preparatory machinery, is calculated from these English estimates, the result is found to be about 20 per cent. less than the actual indicated power.

In one cotton spinning mill with which I am acquainted the indicated power is 616 H. P., as the mill contains 21,192 spindles, running on an average count of No. 20. This is equal to 29.07 H. P. per 1000 spindles or 34.4 spindles per H. P.

The discrepancy between the estimated and the actual power required is due first, to the difference between the indicated and effective power of the engine, which, even with a new engine, amounts to 15 per cent. The estimates made by the machine builders are based, not on tests of the indicated power of the engine, but upon the results of experiments with the dynamometer applied direct to the machines.

The following table gives the results of many experiments made by the

author to determine the effective horse power required for separate machines in the preparatory processes:

MACHINES.	EFFECTIVE H. P. PER MACHINE.	TOTAL.
1 Bale Breaker	2.4	2.4
Lattice, 125 feet long	4.	4.
3 Hopper Feeders	.8	2.4
2 Exhaust Openers	9.6	19.2
2 Small Openers	1.6	3.2
6 Single Beaters	4.	24.
1 Double Crighton Opener	6.4	6.4
1 Opener	3.2	3.2
1 Yarn Picker	1.2	1.2
		66.

Allowing 10 indicated for 8 effective H. P. we have a total of 82 1/2 H. P. for the machines mentioned. Various tests made with the indicator on the engine gave the following results for all of these machines: 84.2; 86.5; 82; or an average of 84.2, equal to 67.36 effective H. P.

The tests were made as follows: A diagram was taken with all of the machines in operation, and indicated 616 H. P. All of the machines were then stopped, the belts left running on the loose pulleys, and a diagram taken, which indicated 151 H. P. The difference, 465 H. P., is the indicated H. P. for all of the machinery. The feeds on all of the preparatory machinery were then adjusted so that all would be working at one time. While thus in operation, a diagram was taken, which indicated 235.5 H. P. The difference between this and 151 gives the indicated H. P., 84.5, for operating the machinery, equal to 67.6 effective H. P., which is very close to the total given in the preceding table.

From tests made by the author and his associates, the following table is compiled, giving the effective H. P. required for individual machines in one of the carding rooms.

This is equal to 76.7 indicated H. P. By the diagram the result for these machines was 79.5 indicated H. P.

Twelve reels and one press were included in the test of the second card room. The total of the detailed estimate for this room was 75.77 effective or 94.7 indicated H. P. Three diagrams gave 95.4, 96 and 94 ind. H. P. respectively.

MACHINES.	EFFECTIVE H. P. PER MACHINE.	TOTAL.
32 Cards	.8	25.6
4 Drawing Frames ..... 67 deliveries	1/12	4.8
4 Coarse Flyers	1.23	4.92
5 Medium Flyers	1.536	7.68
4 Fine Flyers, Platt	1.8	7.2
6 Fine Flyers, German	1.86	11.16
Total,		61.36

For the ring frames, the author estimates .0015 effective H. P. per 1000 turns per spindle per minute; the figures for the 13 machines are as follows:

	SPINDLES EACH.	REVOLUTIONS.	EFFECTIVE H. P.
2 Frames	328	6750	6.62
2 Frames	328	7400	7.28
1 Frame	328	7600	3.74
2 Frames	344	5750	5.94
2 Frames	328	8300	8.20
2 Frames	328	8600	8.46
2 Frames	328	8700	8.56
13	4296		48.8

This is equal to 61 indicated H. P. The ——— diagram for the 13 ring frames indicated 60 H. P.

Account should he taken of the fact that the shafting and belting consume more power when the machines are running than when they are standing.

(To be continued.)

—The following from the Capitol of Calcutta is significant as showing the great decline in one of the most important industries of India—indigo growing:

"Whether the planters of Behar as a body admit it or not, no one with ears to hear and eyes to see can fail to recognize the fact that King Indigo has been dethroned. This is not altogether tantamount to an admission that the days of natural indigo are numbered; but the serious competition of its synthetic rival in the world's market can no longer be ignored."

The journal quoted from then advises planters to seek other crops, and mentions ramie culture as a promising substitute for the declining indigo industry.

—Fortune is never alone in turning her back.—Petit-Senn.

Keeping the Number of Picks Uniform.

In my article in the March issue, I stated that in a mill where I worked, one of the duties of the overseer was to go round the room with a yard-stick and measure the cloth on each machine. This was for the purpose of ascertaining whether the weavers were keeping the correct number of picks in the cloth or not.

My intention was to convey the idea that unless a certain amount of weight was used to hold the warp, that the cloth would be either wider or narrower according as the weight was too light or too heavy.

For instance: A mill is running prints, and they use a reed that will give the desired width when conditions are perfect; naturally, on the score of economy, they have the count of warp threads as low as possible and still call them 64s. If these warps have extra weights, the cloth will be half an inch narrow, owing to the fact that the reed cannot overcome the extra tension, and the up threads are unduly stretched; thus making the distance between cut marks greater, and also causing the loom to put in more picks than desired, owing to the fact that the sand roll does not carry the cloth as easily and sometimes slips a little. Of course, the reverse is true; if too little weight be used, the cloth is loose on the sand roll and, therefore, is carried around in greater proportion; the warp threads have a more decided crimp to them and thus are used up faster, and the reed holds out the cloth perhaps half an inch wider than wanted. The result is plain: Weavers will run their warps very slack unless checked, and if they are reprimanded for this, they are apt to go to the other extreme.

ARTHUR DYSON.

A Shuttle Guard.

The shuttle guard commonly used is made from a length of stout wire having its ends bent so as to form attaching-arms provided with eyes, through which are passed the bolts that secure the end portions of the guard-wire to the lay top bar. This guard-wire has its major portion disposed parallel with the lay top bar and over the path of track of the shuttle as it flies through the shed.

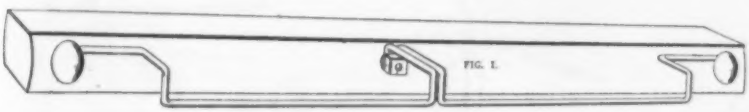


FIG. 1.

FIG. 2.

The accompanying illustrations show a form of shuttle guard for which a patent has recently been issued.

The ordinary guard-wire, which is unsupported between its ends or terminal portions, is liable to be deflected and bent out of its proper parallel relation to the lay top bar by the shuttle striking against the same or from any one of a variety of causes.

The object of the present improvement is to provide an improved guard which will be made entirely from a single length of wire and which shall be braced or strengthened at a point between its end terminal portions, whereby a cheap and simple guard is produced which is not liable to be bent or deflected out of its proper position relative to the lay top bar.

Fig. 1 is a perspective view of the guard attached to a portion of a lay top bar. Fig. 2 is a similar view of the guard removed from the bar.

A Kink Catcher for Spinning Frames.

In the accompanying diagram is shown a device, recently patented in this country, for preventing snarls and kinks from passing with the yarn onto the bobbin during the process of ring spinning. Fig. 1 is a front elevation of a portion of a spinning frame, showing the device and the yarn. The full line position of the yarn is that assumed under normal conditions, while the dotted line shows the yarn when broken or kinked and

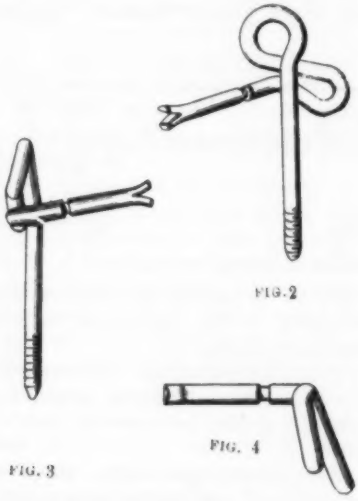


FIG. 2

FIG. 4

FIG. 3

engaged by the kink-catcher. Figs. 2, 3 and 4 are detail views of the device detached.

The straight portion of the guide is formed from a single strong wire. This rod is screwed into the wire-board or guide-board. At the outer end of the straight portion, the wire is bent or rounded to form an eye, constituting a guide through which the thread is passed.

The wire rod is then carried beyond the straight portion, and bent back upon itself and again carried to the other side of said straight portion, and thence outwardly, terminating in an arm constituting a kink-catcher. This arm is provided at its outer end with a prong and at a point near its inner end with a circular recess.

By thus bending the wire rod to one side of the straight portion, and thence back upon itself the guide-eye and the kink-catching arm are located on the same side of the device.

A Leno Selvage Motion.

The device shown in the accompanying illustrations is intended for weaving a leno selvage on fabrics where

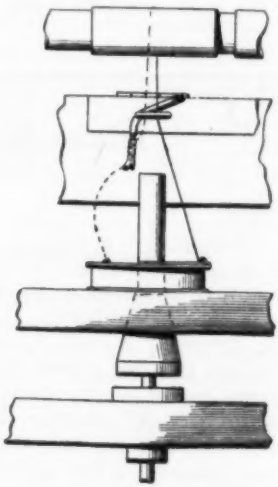


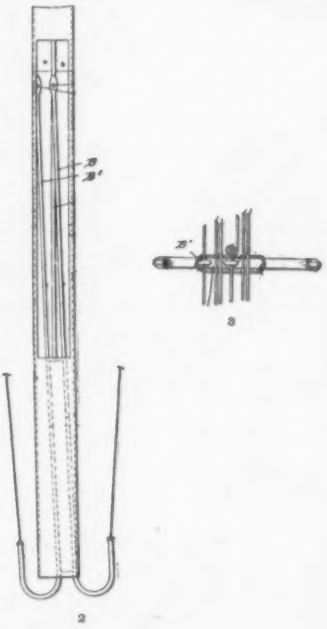
FIG. 1

two or more widths are woven together. Fig. 1 is a perspective view. Fig. 2 is a side elevation. Fig. 3 is a section of Fig. 2. Fig. 4 is a view of the selvages. Fig. 5 is a partial side elevation of Fig. 1. Between the two ends of the frame, A, extend bars having grooves on their inner surfaces, and the central rod or bar is out of alignment with the other bars.

B B′ are needles, having eyes and curved or bent tails. The needles are secured together between the eyes and the tails of the needles, by a plate. The width of the plate is less than that of the orifice in the end of the frame so that the plate with the needles may readily slide vertically in

the orificed end and move laterally slightly in either direction.

The curved tails project beyond the end of the frame, so that they are prevented from entering the orifice. The needles above the plate are guided in their vertical and lateral movements by the groove on the inner surface of the bars. The frame is secured at the upper end to a fixed



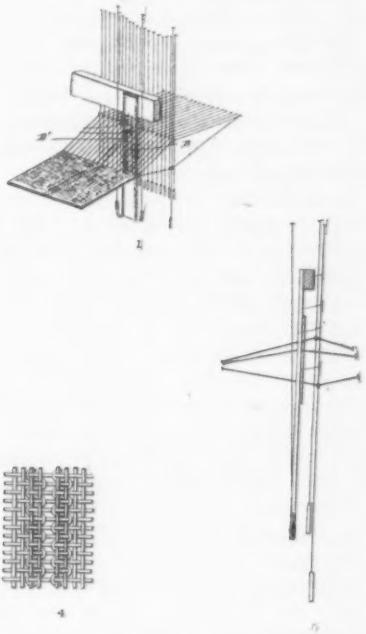
part of the loom, as shown in Figs. 1 and 5.

The tails of the needles have the orifices, from which cords lead to the jacquard or shafts of the loom. The threads to form the selvage-stitches are passed through the eyes of the needles. The warp-threads upon the outside of the inner edge of the two pieces of cloth that are woven together pass between the bars.

The cords are lifted alternately; but the alteration may be after each pick of the loom or after two or more picks. The lifting of one cord will lift the needles and move them to the left, as shown in Fig. 2, while the movement of the other cord will lift and move them to the right.

In the construction illustrated, the cords are operated alternately at each pick, and the weave is shown in Fig. 4.

The cord is moved so as to tilt the needles, and then as the shed is formed the needles are lifted with the



upper warp-threads to one side or the other. After the shuttle has passed through the shed and the pick has been formed the tension upon the cord is released and by gravity the needles will descend to the original position. On the next lift of the needles the opposite cord to that of the previous lift will be operated, bringing the needles to the side of the warp opposite to that of the previous lift, this resulting in the weave of Fig. 4.

—A conquerer, to perpetuate his name, exterminates as many men as possible.—Fontenelle.

WOOLEN DEPARTMENT.

Imperfections in Woolens and Worsteds.

LEWM.

Two very prevalent defects in woolen and worsted fabrics are thick and thin places. These may be classed together because they are usually due to the same causes. In worsteds, uneven places are made easier and show more than in fabrics intended for men's wear. Uneven cloth is generally made by the loom, the principal exceptions being those made by uneven yarns.

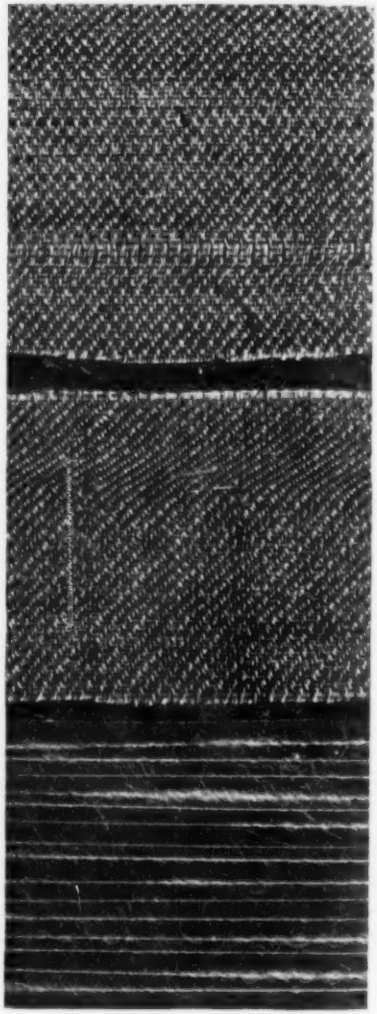
A light fabric in which a thin place may be seen is illustrated in Fig. 1. This variation has been caused by the cloth being drawn down too far after picking out before the succeeding pick was inserted.

Fig. 2 illustrates a thick place caused by the cloth not being drawn down far enough after a pick-out and before the loom was started. Figs. 1 and 2 also show uneven cloth caused by very uneven yarn; this yarn of itself would make uneven cloth if all the mechanisms on the loom were running in perfect order.

Among the causes of unevenness may be mentioned: uneven filling yarn; loom not starting at the proper time after a pick-out; take-up or let-off motions not working regularly; crank arms worn.

Uneven cloth caused by uneven filling is made in two different ways: (1) as in Figs. 1 and 2, clear across the cloth; (2) at irregular intervals; the latter is caused by yarn similar to that illustrated in Fig. 3.

The causes of uneven filling may be traced either to the spinning room, drawing room or card room. Uneven yarn that runs for several yards either thick or thin and then goes all right for a time is due to faulty machinery or help that have to do with it before it reaches the spinning room, generally by carelessness in doubling the roving. Fig. 3 illustrates defective yarn caused by worn rolls on the spinning frame.



FIGS 1, 2 AND 3, BEGINNING AT THE TOP

Defects caused by not properly ad-

justing the cloth after pick-outs before starting the loom again may be blamed on the weaver; therefore, the weaver must be looked to to remedy them. Weavers are liable to make thin places in cloths when the loom is running, by assisting the take-up gear; this of course cannot be done on some take-up motions.

The causes of take-up and let-off motions not working regularly are varied, as also are the effects made by them.

Oil on the friction band will cause the warp to let off in jerks; when the yarn comes forward too much, too much yarn is let off, which causes it to remain still until the cloth gets tight again, when it makes another jerk. Damp ropes, rusty collars or weights too low also cause the warp to let-off irregularly.

On let-off motions that are actuated by gears, particular care should be taken that the gear on the beam head is true with the gear on the let-off motion and that they work into each other freely.

On light worsted work a loose reed is preferable to a fast reed, if even cloth is desired. If the latches or pawls on the take-up motion are not set right, there is liable to be an uneven place at every revolution of the rachet gear. This occurs when the pawl is set so that it does not hold the gear in proper place, allowing the ratchet to stop on one tooth for one or more picks.

Uneven cloth is sometimes caused on light weight worsted goods made on loose reed looms by forcing the lay or reed cap down too tight on the reed; when the reed goes back, there is not a free movement and it cannot attain its original position in time. If the reed cap is forced down too far on fast reed looms, there is a tendency for the reed wire to be forced sideways, thereby making reed marks. Uneven cloth made by loose crank arms is not generally seen on men's wear fabrics, but shows up bad on light worsteds.

Picking and Carding—II.

BY SAM DRIVER.

(Continued from April.)

(Copyright, 1902, Guild & Lord).

Looking over No. 6 and No. 9 finishers, I found they had not been stripped out for three days. The cylinders, doffers and fancies were all glazed over, so I called Pete, the second-hand, to get the strippers and have them stripped out. I told Pete to get a comb and clean the gum out of the fancies.

"Why," said Pete, "if we clean out the fancies, you will have trouble right off; we never clean them."

"No matter about the trouble," I said, "clean them out, I will attend to the trouble. How can a fancy do its work when all filled up with gum?"

So after cleaning out No. 6, I tried both sides of the fancy with my gage, and found one side barely touching the cylinder, while the other was down hard. In putting my gage through No. 9, I found the fancy way in the cylinder so I could not get my gage through. I reset both sides alike, reset the doffers, started them up, and the roping came off very good.

Pete was very much surprised, and said he would not have believed it, if he had not seen it done without grinding.

By this time, Bob, the boss picker, sent word that he was ready for me. I went down to the picker room and found Bob had cleaned the bur picker in good shape. I looked it over, and found that the bur cylinder was away off from the main cylinder, and the brush away off from the bur cylinder. I reset them, had the belts tightened and started up and the stock came out long and fleecy. Bob was amazed, and so was the superintendent.

It was a 1000 lb. batch. I asked the super what the lot consisted of, and he told me it was 30 per cent. wool of three different medium grade qualities, and 70 per cent. shoddy, to be spun to three run warp.

I set Bob and his men at work blending the different qualities of wool in small layers, and then put them through the wool duster and through the bur picker. A great many mills do not have a wool duster, which is a big mistake, as they mix the stock better, besides taking out the shives and dirt.

While the wool was going through the bur picker, the shoddy was going through the wool or mixing picker to open out the shoddy. When it was all through the picker, I looked over the card waste and discovered that it was very dirty, and that the dirty strippings from the cards were all mixed in and dusted along with the clean card waste, making it full of dirt and very gummy. What came out of the first and second breakers was nothing but gummy dirt. I sent for the super to come and see it. He came, and said he did not know how they did use up the strippings. Fine super this!

I then asked him to show me the duster. It was a Stillman squirrel cage duster. The screen had not been cleaned for three months, so there were but a few openings for the fine dirt to go through. The super knew nothing about this state of things. It is to the interest of every carder to see to these little details himself.

Before mixing this lot, I had the card waste put through the wool duster, which improved it very much. We started the batch by making six layers of wool, six layers of shoddy, six layers of card waste and strippings, and six layers of roping waste.

For 300 lbs. of wool we allowed 12 quarts of oil and 18 quarts of clear cold water, making 2 quarts of oil and 3 quarts of water to each layer, or 4 quarts of oil and 6 quarts of water to 100 lbs. of wool and none for shoddy.

"CAPTAIN, THIS IS A HEAP BETTER THAN THE OLD LARD PAIL."

In putting the oil and water on the wool layers, it was immaterial which came first, the oil or the water, as by beating down the oil and wool with a pole, we did not get too much on the shoddy, which made the next layer; the roping waste came next; then the card and stripping waste; then came the wool, etc.

In the meantime, I had obtained a garden sprinkler from the hardware store, took off the rose spout and had a new one made as shown in the

sketch, with holes 1/8 inch in diameter and one inch apart; the end was made to come off, so as to clean it out. I set Bob to work making even layers of each kind and showed him how to use the sprinkler. When he got half across the batch with the sprinkler, he stopped and said:

"Captain, this is a heap better than the old lard pail."

He called me Captain.

Having mixed the lot we put it twice through the picker. While it is going through the wool picker, another batch of wool is going through the bur picker.

There are other places through which the wool passes before reaching the picker room where it may be ruined; one of them is the dry room, where sometimes the wool is baked, and made hard and crispy; then the carder blames the dyer for boiling his stock to death.

All the "slush" is not put on in the picker room. The shoddy is pretty well dosed with "slush" by some shoddy manufacturers before going through the rag picker. The best shoddy is made by putting nothing on except clear oil. Shoddy and "slush" do not agree; they make the stock gummy, and, therefore, gum up the cards. I have been using shoddy many years, and have used it where the manufacturers knew how to make it and have used it where they did not know how to make it. All these things count against the carder, who needs to fear God and gain wisdom.

Some supers are awfully afraid the carder will know how much shoddy goes in each batch. These supers are not wise. If the carder knows what each batch is composed of, it will be for the carder's, the super's and the company's benefit, and those that do not let the carder know, lack wisdom.

Judgment must be used in working shoddy. If extract, allow 1 quart of oil to 100 lbs.; if not extract, allow none. Manufacturers do not know how much "slush" or what not is in the shoddy they buy, but they ought to know. That is one of the shoddy manufacturer's secrets; the carder suffers the consequences.

If I were buying shoddy, I should want to know what was put on it and how much there was to 100 lbs.; then I would know better what to do with it. Good drying, scouring, dyeing, picking and blending are the very foundations of good carding.

If the selection of stock for the different use is not properly made, it is another drawback in making good even yarn; coarse fibres and those of a very silky nature will not card or spin well together, and will cause twits. Every means should be used to further these ends. Our most successful supers see to all these points; they are in the mill and not sitting in the office all day.

Every picker room should be in charge of a good reliable man. He should be paid decent wages and should see that every batch is properly mixed, oiled and picked. It pays the manufacturer to have such a man. Some supers do not take any interest in these things, and many carders have lost their situations through not attending to the picker room. Every carder should have charge of the picking.

Following are a few of the emulsions or "slush" I call them, I have found being used in some mills: One used 16 gallons of water to 6 gallons of oil, with sufficient soda ash and borax to saponify the oil and water; 10 quarts to 100 lbs., and put on boiling hot. Another used at the rate of 15 gallons of oil to 30 gallons of water, using enough borax, soda ash and ammonia to saponify, and applied boiling hot, putting on 12 quarts to 100 lbs. of shoddy stock. Another used oil with enough crown soap to saponify with water.

I want to put great stress on the importance in using these emulsions. In the many mills I have worked in,

where "slush" was used, I have found the strippings soggy and gummy on shoddy mixtures. The remedy has been cold water and clean oil put on separately. "The proof of the pudding is in the eating."

I had charge of carding in a 26-set mill some years ago, not a hundred miles from Burlington, Vt. We were using fine domestic wool for police, army and conductors' indigo blue goods, etc. Now the wool in this mill was always felted, and came to the cards more like marbles and almost as hard. The boys used to play with them as if they were marbles. I did everything I could with the cards, reset them, ground them, etc., but still the work did not suit me. I went to the super and agent, and told them I could not card out the stock to my satisfaction, and that it would come out more or less knitty.

"Well," they said, "what reason have you to complain; we are not finding fault with you; your work is satisfactory to us."

This place was another case of using "slush." When we commenced to use cold water it made a great improvement in the looks of the yarn, but still it was not satisfactory to me. After nine months I gave them my notice. In the meantime, I got notice from the head office in Boston to call and see them. I called and Mr. P—— asked me what I was leaving for. I told him that the wool was felted in scouring, dyeing or something else, and that I could get no one to fathom the difficulty.

"Well," he said, "we are sorry you are leaving. We were just on the point of giving you charge from the wool room to the card room."

I though I would drop to the floor. I lacked wisdom! I had engaged with another party.

(To be continued.)

—It is rare that the evil we do affects ourselves alone.—Diderot.

—Our best protectors are our abilities.—Vauvenargues.

Finishing Wool and Mixed Fabrics.

XIII.

BY N. REISER.

Translated from the German for the Textile World.

Continued from April.

(Copyrighted 1901 by Guild and Lord.)

GIGGING OR NAPPING.

The object of this process is to loosen not only the fibres lying on the surface of the fabric, but also a portion of those forming the body of the threads, to secure a fluffy mass of loose fibres that may be brushed parallel with each other, or left in a confused mass on the face of the goods. To facilitate the loosening of the fibres the goods are usually gigged in a wet state, as the wool fibres when wet are softer and more pliable. At the same time, there is the danger in gigging wet goods of giving the fabric a scaly or irregular appearance.

The fulling and scouring processes cause the fibres to become felted and interlaced with each other in all directions; gigging brings them parallel, thus giving the cloth a softer handle and more lustre. If the loose nap is sheared off, the face of the goods is cleared out so that the threads can be readily distinguished.

There are many classes of goods such as cheviots, meltons and friezes that do not require gigging, in fact gigging would destroy their peculiar character. The case is different with goods that are to handle soft, as a felted fabric generally has a hard face.

Gigging is the most important process in finishing face goods. The work must be done carefully and requires great knowledge and skill to secure the best results. Care must be used not to make the goods tender. Woolen goods are almost exclusively gigged in the wet state; the harder they are fulled, the more slowly must the gigging be carried on. The fibres are very

easily torn out by dry gigging and very little lustre is obtained, since in the dry state the fibres are wiry and brittle and not readily brought parallel with each other. For this reason dry gigging is only employed when the goods require very little gigging, and in such a case hard brushing or napping on a wire gig is to be preferred to dry gigging with teasels.

Good results are obtained in dry gigging by steaming the cloth at intervals during the process.

For gigging woolens, the vegetable teasel is chiefly employed. During recent years wire nappers have been introduced for this work with very good results. These teasels or thistles grow wild in many parts of Europe, and owing to their use in finishing are cultivated for the market. The best grades are raised in France and the Netherlands. The best French teasels come from Avignon, and are about 15 per cent. heavier than the best of other grades. They are distinguished for fine barbs, elasticity, hardness and durability, large size and sharp points. As they grow in many different sizes, it is necessary to sort them carefully, since but one size can be used at one time.

Fixed rules cannot be given for the selection of teasels in gigging cloth; long practice experience is the only guide. The grade required varies with each class of goods. Teasels should be kept dry before using. The quality depends not only on the condition of the points, but also on the heart or core, which should not be yellow. The points should not bend outwards too much or too little. The teasels should be sorted in from four to six and sometimes more sizes, and also according to the condition of the points. If this work is not well done, gig streaks in the cloth are sure to result.

New teasels should not be set with old ones and where this is unavoidable, the new ones should first be rubbed over slats to dull the points and bring them nearer the condition of the old teasels with which they are to be placed. Generally, it is necessary to dampen the teasels with lukewarm water before setting, since otherwise the points are very liable to break.

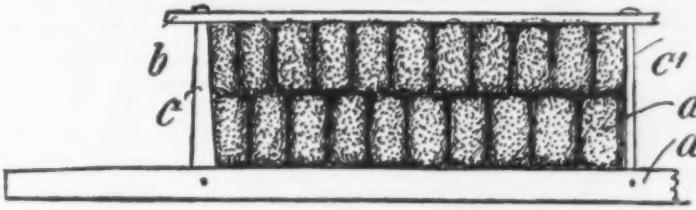


FIG. 41.

One, two or three rows of teasels are set in a slat; slats with one row set with very large teasels are used only for the heaviest classes of goods such as horse blankets. As the teasels become filled with flocks by use, it is necessary to clean them frequently. This should not be done while they are wet, as the brushing is then apt to injure the points. New and old slats should not be mixed together; if they are so mixed, the finish of the goods will be irregular.

The slats should be numbered when taken from the gig that the workmen may know how much each slat has been used. Teasels are very liable to rot. This can be prevented to some degree by treating them in a sulphate of iron or copper solution. This treatment is, however, liable to cause spots on colored goods.

Setting the teasels in the slats is a very important work, preparatory to gigging; upon it depends in great measure the success of the latter

process. Fig. 41 shows a portion of a slat set with teasels. The teasels, which have been carefully sorted as regards thickness, strength and condition of the points, must be firmly set in the slats so that a level surface is presented to the cloth in the gigging process; any irregularities caused by protruding teasels are certain to result in streaks in the goods.

The teasels should not be dampened too much before setting, as they are very easily injured by water, especially if hot. The stems of the teasels in the lower row pass between the iron bands forming the lower part of the slat. The teasels for the second and third rows are now pressed firmly in place so that all may be firmly joined together to form a solid mass. The stems of the second row must be long enough so that they will extend down between the iron bands of the slats. For fine face goods, the three row slats are the best, since they have a more uniform and regular surface.

After setting the teasels, the stems that protrude below the lower part of the slat are cut off. A good teasel setter should possess not only natural adaptability for the work, but long experience.

Cotton goods are napped almost exclusively with wire, and this method is used to a large extent for gigging woolen goods also. In former times the work of gigging was done by hand with hand cards about 8 in. wide and 7 in. high. In this frame from two to three rows of teasels were set. Two hundred and twenty years ago an Englishman, Delabadie, invented a machine for gigging. At the present time, gigs are divided into five classes: Single, double, roll, combination and wire.

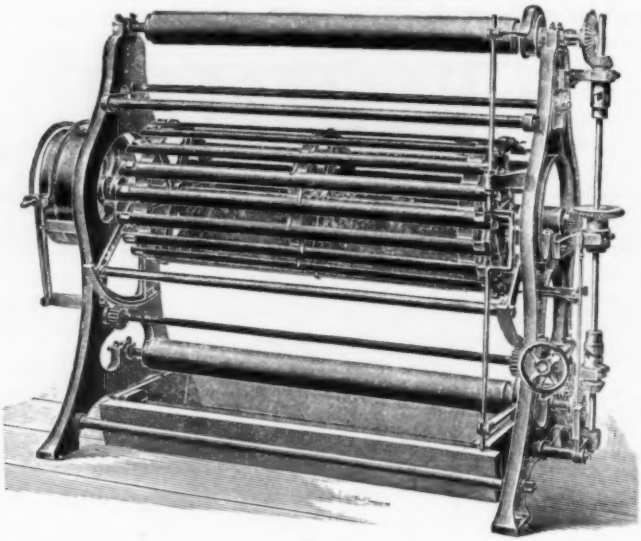


FIG. 42.

(To be continued.)

—We love to give in the sunlight and receive in the shadow.—Petit-Senn.

—There are people who make a reputation for kindness of heart by refusing with tact favors that are asked of them.—Petit-Senn.

—From a confidence to an indiscretion is but the distance from the ear to the mouth.—Pichot.

KNITTING DEPARTMENT

The Knit Goods Situation.

This particular season of the year usually proves to be a flat and uninteresting time for underwear agents and commission men, and the present year is no exception to the general rule.

In the majority of cases agents have had a satisfactory business on fall goods, and where mills are not already sold up there is every assurance that duplicate orders will be received in sufficient volume to take care of the entire production.

The market is in a much stronger condition on fleeced goods than at our last writing, and numerous advances have been recorded. Some staple lines of fleeces which are yet in the market have been advanced from 12 1/2c. to 25c. per dozen, and in some cases where the entire season's production was sold up earlier in the season, the sellers realize that they sold their goods at too low a price, and that the earlier price-cutting which prevailed was entirely unwarranted.

Many manufacturers will, of course, hold to their contracts and their orders will be filled but there is a general feeling that much of the merchandise sold earlier in the season at close prices will never be delivered. The advances in the prices of yarns will render it utterly impossible for some manufacturers to make and deliver their goods at the prices at which they were sold without suffering severe losses.

Buyers who did not fully cover their requirements early in the season will find, when they come to place their duplicate orders, that they will be obliged to pay considerably higher prices. One of the leading lines of men's fleeces in the market, on which there were numerous price fluctuations several weeks ago, has quite recently been advanced to $3.25 per dozen and a still further advance is looked for very shortly. The lower priced fleeces weighing from 9½ to 11½ lbs. and selling from $2.62½ to $3.00 per dozen, have been out of the market for some time.

In spite of this stiffening of prices in the primary market, many of the western jobbers are in keen competition and have been booking orders for fleeces at ridiculously close figures. Numerous cases are on record where jobbers have sold for $3.12½ and $3.15 lines of fleeces for which they paid $3.00 per dozen.

Notwithstanding the extremely unseasonable weather of the past few weeks, stocks of summer goods in the hands of the jobber are unusually low, due to the fact that initial orders were light and deliveries on duplicates very slow. Complaints are being received from every section of the country of delays in the delivery of spring underwear of every description, men's, women's and children's.

Not one manufacturer alone or even a few, but practically all are in the same position as regards deliveries and buyers have been heard to assert their belief that in some cases manufacturers have been delivering goods to late buyers who had paid higher prices for the goods to the neglect of their early orders which had been booked at closer figures. These slow deliveries are, in some cases, attributed to a scarcity of laces and mercerized tapes for trimmings as well as cotton galoon bindings. Other manufacturers assert that they are unable to procure the necessary help for finishing their goods and still others account for the delays by stating that they ran too long on duplicate fall orders to the neglect of their spring business.

Balbriggans are in strong demand and ribbed goods of every description are considered good property.

In the hosiery market the same quiet prevails, although the season has been in the majority of cases satisfactory. Deliveries are considerably behind, but the condition is not so bad as in the underwear division of the market. In the majority of cases agents have their lines well placed, and numerous advances of from 5 per cent. to 10 per cent. have been reported. Lace and embroidered effects of every description are well sold up and there is almost sure to be a scarcity of lace hose before the season is over. One or two of the prominent manufacturers of ladies' full fashioned lace hose have already sold up some of their leading lines for spring of 1903, and jobbers are even now out on the road booking orders for next spring deliveries. Printed effects are almost entirely discarded, although extracted goods are still favorably received in some sections of the country.

Manufacturers of golf vests already have their plants running full time on fall orders and there is every indication that demands will exceed that of last season. Practically the same styles are being made, the better sellers being the double breasted sleeveless garments; the favorite colors are green and cardinal solid colors, and fancy combinations with these shades prevailing.

The Chemnitz market is fairly active with some advances reported on laces and lace embroidered goods. The scarcity of ladies' hose of this description still continues and manufacturers are falling behind their schedules with deliveries.

Golf gloves still continue to occupy a prominent place in the activity of the Chemnitz market and manufacturers are running their plants overtime in an attempt to fill their orders, the first shipments of which will soon be due. It is quite evident that more orders have been booked than will ever be filled and many buyers will find themselves in a corner on golf gloves before the season is over.

Washing Underwear.

Frequently manufacturers have occasion to wonder why the goods of their competitors are so much superior to their own. In many cases, an investigation would disclose that the trouble is not caused by inferior workmanship in knitting or finishing, but is due to inferior stock or manipulation of the same, or to faults in the methods of scouring. It is impossible to lay down a general rule for scouring all classes of knit underwear, as there is such a diversity of stock, and each kind requires special treatment.

For mixed goods composed of cotton, shoddy, etc., washing and bleaching is best done in the roll. The best machine for scouring knit goods is the well known washing or fulling mill in common use. Recent improvements have made adjustments and repairs very easy. The best machine is the cheapest, and, if the mill is as it should be, the garments will not be rolled, chafed or matted together. To preserve elasticity knit goods should not be felted.

The mistake is frequently made of first putting the goods in the mill and then throwing the hot liquor on them; this method is all wrong. The proper quantity of soap should be put in the mill first, and the goods entered equally on each side. The soap should not be too hot, as a high temperature causes an excessive shrinkage. The workman should be provided with a thermometer, and held responsible for any variations in the temperature of the soap applied to the goods. The soap should be neutral and of the best quality; if alkali is needed, let it be added by the workman himself.

In washing or rinsing use plenty of liquor, so that the garments may be kept open and felting prevented. The rinsing water should be at the same temperature as that of the scouring liquor.

It is impossible to tell in advance how much a new grade of stock will

shrink in the finishing process. When any change is made in the raw material, a few dozen should be put through without delay to determine the actual shrinkage; otherwise, the manufacturer may find it necessary to change the size number from that intended. Right here, I wish to offer a word of warning against goods that are sold as non-shrinkable,—"Beware of the dog."

For goods with a large percentage of cotton, it is well to use the soap warmer than for all wool goods.

The quantity of oil used in the raw stock should be taken into consideration, as it has an important effect on the subsequent process of washing. Mineral oil is especially difficult to remove.

OLD SUPERINTENDENT.

An Unraveling Machine.

This machine, recently patented in this country, is provided with an adjustable holder and a mechanism for varying the speed of each reel as required. Fig. 1 is a front view; Fig. 2 shows the arrangement of the belt for driving the reels.

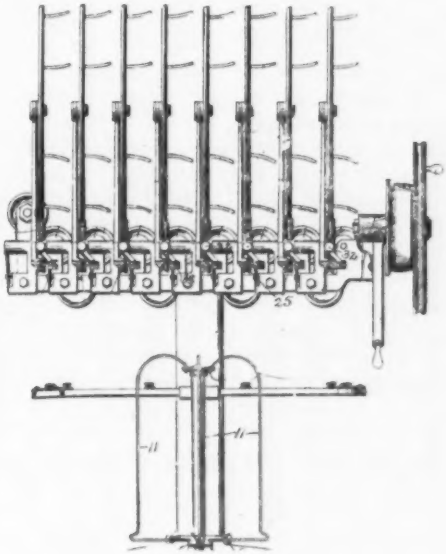


FIG. 1

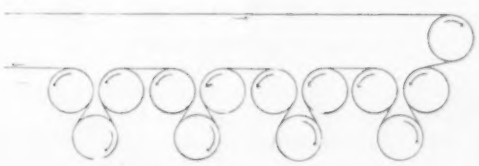


FIG. 2

The inventor states that it oftentimes happens during the knitting of tubular portions forming the main portion of underwear, etc., by machinery that by reason of the breaking of the thread and other causes, which are apparent to those who operate knitting machines, portions of the knitted tube are cut out and generally thrown away as waste.

The threads composing these knitted

portions are capable of use in other portions, but must first be unraveled and placed on bobbins ready for use.

In the unraveling of goods of this kind it will be readily seen that to wind the thread properly the reels to contain such thread must take up the threads as fast as they are unraveled, and for this reason must be rotated at varying speeds, which can be readily adjusted as may be found necessary by the operator of the machine.

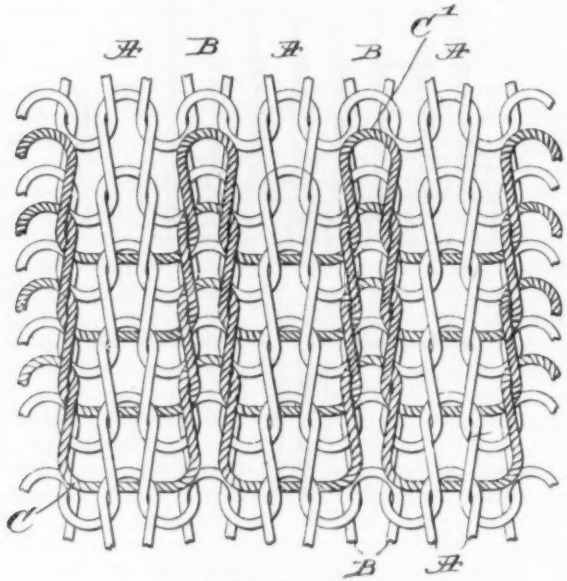
As the tubular knitted portions vary in size, it is desirable that the holder for these portions may be adjustable in order that fewer auxiliary parts are required for the machine.

The pulleys are driven at the same speed, but a separate device, operated by the handle, 32, is provided for regulating the speed of the disc, 25. The rods, 11, of the garment holder are adjustable so that the diameter can be changed to suit varying sizes.

—The age of maturity weakens our inclinations and strengthens our habits.—Mme. Necker.

A Rib Knitted Fabric.

The knitted fabric shown in the accompanying illustration has recently been patented in this country, and is composed of different threads, one or more of which are manipulated or interknitted to form a ribbed fabric, while the other thread or threads are interknitted to lie in wales at one surface only of the fabric between the



A RIB KNITTED FABRIC

longitudinal knitted wales of the ribbed fabric.

The thread interknitted to lie upon one surface of the fabric may be used to ornament the fabric, or the thread may be of such a nature that it may be teaseled or worked to produce a pile.

Usually a rib-knitted fabric has incorporated with it at one side a pile-thread, lying loosely behind the loops in one row of knitted wales facing one side of the fabric and crossing the loops of intermediate knitted wales facing the other side of the fabric; and the pile-thread of any desired length or degree of slackness crossing

the intermediate wales is by usual means acted upon to produce a pile or fleece.

The inventor states that a rib-knitted fabric in which the pile-thread is simply laid across the ribs of adjacent wales cannot have the pile-thread incorporated with the rib-knitted fabric with sufficient firmness to retain its position in the fabric, and strain exerted on a loop of the pile-thread between adjacent longitudinal wales of the rib-knitted fabric will draw the pile-thread from a number of the adjacent longitudinal wales, thus presenting a long loop of the pile-thread at the face of the fabric, which is decidedly detrimental thereto.

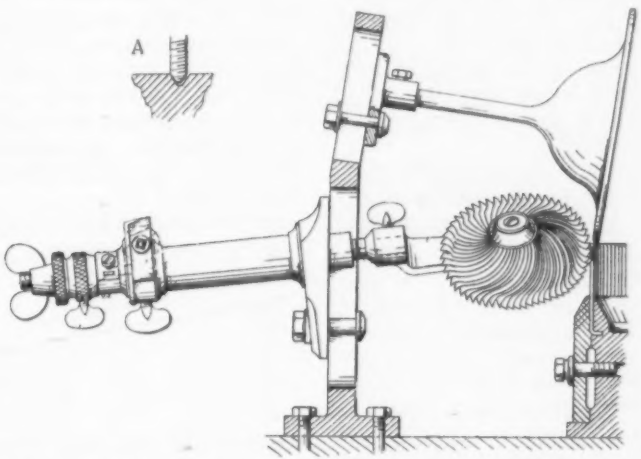
It is stated that in this new fabric the pile-thread is knitted into itself course after course between the knitted wales of the rib-knitted fabric, and, consequently, any strain exerted upon any part of the pile-thread between any two adjacent wales of the rib-knitted fabric will not result in drawing the pile-thread from an adjacent longitudinal wale of the rib-knitted fabric. By thus knitting the pile-thread between the knitted wales of the rib-knitted fabric a more uniform and even surface is produced upon the completed fabric.

Interknitting the pile-thread with itself, course after course, results in forming on one face of the fabric a series of wales formed entirely from the pile-thread, the pile-thread wales alternating with the longitudinal wales of the rib-knitted fabric.

The illustration shows a piece of rib-knitted fabric made in accordance with this invention, the fabric-threads and intermeshing being exaggerated to illustrate interlooping of the threads.

The body of the knitted fabric is formed of inner and outer body ribs or wales, A B, knitted in usual manner on dial and cylinder needles, thus constituting a regular rib-knitted fabric in which none of the regular rows of stitches are omitted.

As this fabric is knitted course after course, the pile warp-threads, C, are incorporated with it, crossing the longitudinal wales, A, and being knitted into itself course after course to make between the longitudinal knitted wales, A A, and at one side of the longitudinal knitted wales, B, of the rib-knitted fabric, a series of wales, C, composed entirely of the pile-thread.



A Feed for Knitting Machines.

The accompanying illustration shows a device for feeding the yarn to a circular machine, and has recently been patented in this country.

The inventor states that the objects in view are to provide a lining in the tube to centrally and positively position the shaft carrying the toothed

crimper, bur, or stitch-wheel, and to have said shaft adjustable, to prevent the shaft from shaking, and to provide simple and effective means for setting the toothed crimpers, burs, feed or stitch wheels, so that, when the holding or supporting means of one is substituted for another which has been removed, the last-applied device of this class will occupy the same position as the one removed.

The several improvements set forth will prevent many disadvantages now encountered in this class of devices, and various adjustments can be obtained by simple operations and without separating the parts.

Wear is compensated for at all points, and the shaft or rod is held firmly in the centre of the tube and is prevented from shaking.

The nut shown in the drawing, together with the parts it engages, particularly the shaft or rod, regulates the pressure of the spring, and controls the pressure of the feed or stitch wheel against the needles; this spring makes the wheel self-adjustable by allowing it to pass any knots or imperfections in the yarn.

The control of the several adjustable features is also attainable at the outer end of the attachment and is thus accessible.

As shown at A, it is proposed to have all the set or clamping screws in contact with a portion of one wall only of the grooves in the parts with which they act, particularly where movement of the grooved part takes place, to avoid wear and frictional bind as much as possible.

—The human heart,—a few particles of gold in the midst of a mass of mud.—Basta.

Irregular Lengths in Men's Union Suits.

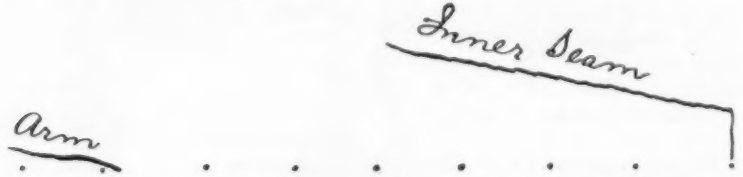
Editor Textile World:

Referring to the articles that appeared in the March issue, I will name a few of the causes of irregularity in the length of men's union suits: Uneven yarn; uneven stitches; drawing too hard, with the takeup on different machines.

To overcome the trouble, all these things must be closely watched. See that every feed on the machines draws the same amount of yarn in length to any given number of needles or stitches. Get the stitches right for the weight of the goods on one cylinder, then set the others by this standard; adjust the take-up so that all will draw evenly. Count the stitches with a glass when all these things are properly adjusted. It is about all that can be done to the knitting machines.

It is a good plan to let the cloth lay in folds about the length needed for the garment. A good way to test the shrinkage is to cut out a garment, lay it out straight on the table and then push both ends towards the centre and leave it over night. I have known them to go up from four to ten inches. When this variation occurs, one may be sure that there is something wrong in the handling of the machines, and that all are not working alike in cutting the suits.

Care should be taken not to stretch the web. Cut each garment separate, bringing it up to the mark on the table. Lay them loosely on one side until there are a dozen together, then fold the web thus:



Union suits should be folded as they pass from one operator to the other to prevent uneven stretching of the garments.

To shrink cotton web from the machine, it should be boiled one hour in a very weak solution of soda, and then rinsed in clear cold water with a little ammonia, which will usually keep the color and lustre, but lose much of the elasticity. Fourteen inch cylinder cloth will be scant 13 inches in width by this process. I prefer the upright hot air driers for knit goods. Use a spreader on the dryer one inch wider than the size of the cylinder. Fold from the dryer, roll in proper length and leave over night. They can be cut in the morning with very good results. ULME.

The Cost of Needle Breakage.

The cost of needle breakage in knitting mills, especially in knitting seamless hosiery, opens up quite a wide field for argument. This expense is proving to be quite an item in the cost of producing goods, and is one that will grow larger unless a competent man is put over competent machine fixers.

I would like to call attention to the following statement showing the number of needles broken, and worn out for each day in a week, with the number of dozens of hose knit in one of the largest and best equipped mills in the Southern states, and one of the most prominent in the domestic hosiery market. The number of machines in operation were 287, full automatic, 176 needle gauge.

DATE.	BROKEN.	WORN.	TOTAL.	DOZ. KNIT.
Monday, . .	292	155	457	1105
Tuesday, . .	262	162	424	1110
Wednesday, .	306	163	459	1129
Thursday, . .	263	191	454	1159
Friday . . .	284	213	497	1137
Saturday, . .	257	123	360	809
	1614	1007	2651	6449

It will be seen from the above statement that one needle was broken for each four dozen goods knit, and 1 needle worn out for each 6 2/5 dozens knit. The latter item can hardly be reduced to any great extent, about the only way being in securing needles of the best quality. The former item is the one to which the attention of mill men should be directed. The breakage of needles is caused either by bad yarn, poor needles, or careless help.

In the statement given above the mill was having a great deal of trouble with bad yarn on account of same coming up so uneven, two or three different numbers on each cone, also by large knots. The mill was also having quite a lot of trouble with poor needles,—latches pulling out and breaking off. The help in this instance is some better than the average mill operative in the South.

By comparison with other manufacturer's reports from Southern knitting mills, it will be seen that the average needle breakage is not so large in this statement as is generally the case in other Southern mills. Six months ago the per cent. was a great deal larger than it is now, and the improvement is due to the method of keeping up with new needles. Each fixer has charge of a certain number of machines; a record is kept of each box of needles delivered, and he in turn keeps a record of each needle given to his knitters. A certain number is allowed, and all needles broken over and above that number are charged up to the knitter at 1 1/2c.

—The United States succeeded in sending to the Philippines, cotton goods valued at $4908, in September, 1901. We might have reason to be proud of this achievement in foreign commerce if it were not for the fact that the Philippines received from other countries in the same time, cotton goods valued at about ninety-four times that amount, or $464,265.

—Systems? Crutches for the incompetent.—Taine.

—Horses are like men; nothing tames them so quick as a fall.—Gozlan.

—I love the peasants; their minds are not so well trained that they can dissimulate.—Montesquieu.

SILK DEPARTMENT.

Cost of Weaving Silk Goods in France.

The bulk of the silk goods made in France are manufactured "a facon" as it is called, the work being done at an agreed price for outside parties who own the material. Le Moniteur du Zissage des Soieries calls attention tion to the necessity for the weavers to resist any proposition to reduce the price paid them for weaving, and gives the following estimate of the general expenses of a French silk weaving plant, which will afford our readers an opportunity to compare conditions in France and this country:

Cost of a 200-loom silk mill with plain looms, $400 per loom $80,000

YEARLY EXPENSES,

With Water Power.

Interest and depreciation, 12%	$9600
4 loom fixers	1200
2 clerks	800
2 boys	400
Carpenter and blacksmith	600
1 watchman	300
Handling goods	1000
Horse and carriage	300
Freight	800
Insurance	200
Taxes	500
Lighting	600
Heating	400
Care of machines, reeds, belts, shuttles, cords, cards, etc, $20 per loom	4000
Care of buildings and material	1000
Oil and cleaning	200
4 women inspectors	800
Traveling	200
Incidentals	600
	$23,400

This amount for 200 looms running 250 days per year is equal to 46 8/10 cents per day for each loom. If steam power is used 3 cents should be added, making 49 8/10 cents.

If fancy looms are installed the cost of the plant will be $600 per loom, and the operating fixed charges that we have enumerated will reach $28,200 or 56 4/10 cents per day for each loom.

In addition to this amount the price a facon must cover the wages of winders, reelers, warpers, weavers, loom and mounters, as well as rebates and the increase of cost due to loss of production.

The Throwing Industry.

A paper read at the recent meeting of the Silk Association of America, by Thos. J. Dynan, Bethlehem, Pa.

A review of the throwing trade for the past year affords few matters of general interest and no special subject calling for extended remarks.

The conditions at the beginning of the year were most unsatisfactory, but these have to some extent improved and are now fairly gratifying.

It is a curious reminder of the mutability of affairs that Pennsylvania, once the Land of Promise to every throwster, no longer affords such large centres of unemployed labor from which to fill and run his mills.

A few years ago in any fair-sized town could be found boys and young men, girls and young women, glad to find employment; and in those communities where silk mills were located such mills had abundance of labor from which to draw, and the remuneration was considered tempting. Since that period there has been an astonishing increase in the number of knitting mills, and these knitting mills, manufacturing undergarments, etc., have slowly but surely made heavy inroads on the labor supply, until today these constitute a heavy menace to the whole throwing trade of Pennsylvania.

They can and do pay better wages; they are as a rule less noisy and there is no doubt that they are kept in a much more cleanly condition.

They exert at this present time a decided influence on the labor market, and assuming that their present rate of growth continues, the throwsters

of Pennsylvania will soon be seeking for new fields. The interesting question is, Where?

Piece Dyeing and Finishing.

A paper read at the recent meeting of the Silk Association of America, by Albert Blum (The Alexander Dye Works, Lodi, N. J.).

Regarding the trade conditions of the piece dyed branch of the silk industry for the past year it can safely be stated that, while they show a slight improvement in the quantities manipulated, they are very unsatisfactory from the point of view of the prices obtained by the dyers for the results accomplished. As far as the home production of the grey goods is concerned, the growth has remained at a standstill. There is still considerable hesitancy on the part of the silk manufacturers to enter this field. This is especially true in the cotton and silk mixed fabrics, of the lower grades of satins and serges, in which the importations from France and Germany run up to thousands of pieces per annum. In fact, the domestic output in cotton back satins is composed almost entirely of 36 in. goods for lining purposes, ranging in price all the way from 35 to 90 cents per yard, and calling for very much more expert handling than similar fabrics in Europe. On the other hand, in schappe filled goods the progress in production has been more marked, although here again we are confronted daily with higher class articles than those made for piece dyeing in Lyons, which consequently require more tedious and costly processes. While we are not averse to push the piece dyed fabrics towards a higher plane, it must be borne in mind that the greatest field lies in the larger development of the lower grades. In all silk goods in the gum, such as chiffons and mousselines, there has not been any serious attempt made to manufacture these articles at home, though the annual consumption in this market has probably reached the half million mark in the number of pieces.

Unfortunately, through lack of organization and understanding among the manipulators, a majority of the fabrics they handle are being dyed and finished at figures absolutely inconsistent with the labor and risk entailed, and I believe that the piece dyeing industry has reached a stage where a better co-operation of those engaged in it is essential to its future welfare.

A Silk Reeling Machine.

A machine for reeling silk from wet cocoons direct to the spool has recently been patented in this country; it is claimed that the strand is packed and rounded and the silk thread comes from the spool or drum dry and free. The invention embraces, among other things, certain devices for passing the strands for the wet cocoons to the final spools or drums, the heating apparatus, the treadle operations, and the spooling and winding devices.

It is intended for a domestic or foot-driving machine, but may be used as a power or factory machine.

The illustration shows a cross section.

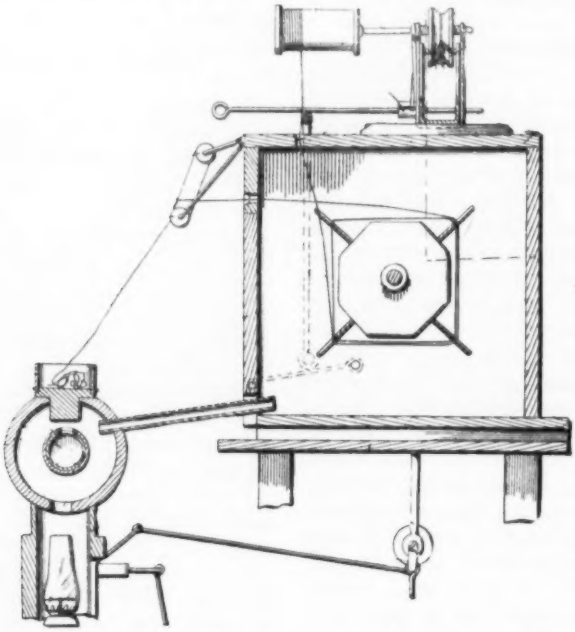
The usual winding from the cocoons first upon reels, then unreeling from its reels, then making the silk into skeins, and then sending the skeins to market or to factories to be twisted, are dispensed with. It is claimed this saves great loss and liability of tangling from frequent handling of skeins in removing from reels, tying into banks or skeins, boxing or baling, transmission to the factory, and subsequent handling at the factory and preparing at that place of the skeins before spooling.

One of the reels is shown in the drawing. The long treadles are provided with connecting rods attached to a crank shaft. A key or cam serves for lowering into action or for raising out of action by turning it partly

around the spool spindle and its spool. When raised, its pulley no longer rests on the cord and ceases to be driven by the friction of the cord.

It will be seen that the long treadles are for the foot power, and the small treadles resting on them are for pushing on the cranks.

A most essential part of the machine and operations relates to the dry hot reeling from the wet cocoons,



of the twisted and dried strands or thread formed from the filaments from such cocoons and wound on a spool or drum, as above indicated.

A strand of several filaments is passed first over the two guide pulleys, supported one above the other at proper distance from each other above the basin, the filaments passing once over around these pulleys, as shown. Then this strand is twisted some thirty or forty times upon itself midway between these guide pulleys. In the drawing to avoid confusion only a few of these twists are shown.

The twisting of the silk is of very great importance. When properly done, the compactness and roundness of the strand is effected. After leaving the pulleys the strand having passed through its hole, it passes one or two times around the swivel, as shown, thence to the top hole in the upper part of the chamber, and thence once around a transverse bar, which in its traverse or swing is operated by its link, reciprocated by a pulley.

—A thing sadder than ceasing to live; to realize that one has not lived. —Valtour.

—Politeness is a money that enriches those who dispense it.—Persian proverb.

—It is necessary not only to be great, but to arrive at the right time. —Mignet.

—Imagination paints, mind compares, taste selects, talent executes.—T. Gautier.

—It is much better to prevent than to punish evil.—Fenelon.

POWER DEPARTMENT

Memoirs of a Veteran Master Mechanic.

EBEN GOULD.

III.

In describing the gear of the Newport engine in the March article, the size was given as 16 inches; it should have been 16 feet.

I hired out with Mr. B. to do the wood and iron repairs for the machinery of the mill as well as to look after the engine and boilers. All the boilers were of a type called at that time the hognosed boilers, and were built by the Corliss & Nightingale Engine Works in Providence. The engineer, J——, was a relation of Mr. B., and he did not like the idea of any stranger having anything to say about the care and running of his engine. For a while, I kept quietly about my work and left him alone.

The engine was a Corliss beam engine, and at that time there was no appliance to have the engine automatically shut off steam and stop itself, if the regulator belt should break, but in such a case the valves unhooked and opened the length of the straps; consequently, the engine would gain in speed until some one shut off the steam by closing the main valve in the steam pipe.

HE RAN FOR THE SWAMP.

One day, while I was at work in the finishing room near the engine room, I noticed that the shafting was beginning to run faster. I ran to the engine room, and as I neared the door, I saw engineer J—— running from the engine room towards a swamp that was several hundred feet away; he was making the liveliest time that I ever saw made by an engine driver. He was scared and did not dare to go into the room to shut off steam, but ran for the swamp.

I hurried in to the engine room, and if ever I saw a beam engine dancing a jig, it was that old engine of the Maverick Mills. I shut off the steam and it soon slowed down. No real damage was done, but what kept that balance wheel from flying to pieces, God only knows; it must have been made of the best of iron. Soon after the engine was stopped, engineer J—— came out of the swamp, and walked to the engine room, but not in the hurry exhibited on his way out. I had no further trouble about anything I wanted to do to the engine or boiler after that time, and engineer J—— did not like to hear anything about going out into the swamp to sit in the shade.

Soon after this incident of the engine race, one of my old friends came from the Corliss shops, and we soon had a plan carried out by which, in case of the regulator belt breaking, the valve motion would stop working and the engine would stop automatically, and I never saw any more running away on the part of the engine, or the engineer.

Soon after coming to these mills, Mr. B. came in the shop one Saturday afternoon, reported a leak in one of the dyehouse boilers, and wanted me to cast off the boiler, and come in Sunday to see what was needed, so that on Monday he could send to the Corliss works for some one to do the repairs.

On looking the boiler over, I found that the putt of the boiler called the

angleiron was cracked clear across and would have to be cut out and a new one put in place. I found out what was wanted before going home Saturday, and, looking in the smithy, I found some good Norway iron in just about as good shape as one would want to make an angleiron.

Having a first-class smith at work for me, I asked him if he would attempt to forge one of the irons. He had never done such a piece of work, but, being ambitious, was pleased to get the chance of doing the job. I helped him, and out of an old piece of leather belt I made a pattern, and in the early morning we were at it, cutting out the broken iron, fitting the leather pattern, and then forging the new iron. About noontime, the boss of the dyehouse came in and saw what we were doing. He did not seem to like it and said:

"Mr. B. did not tell you to do that; you were only to see what was needed, and he was going to send to Providence for a man to repair the boiler."

I replied,—

"I know he did not tell me to repair the boiler, neither did he tell me not to do it, and I shall report to him Monday morning everything that is needed, but the boiler will be all fired up so that you will go at your work as you usually do on a Monday morning."

What made him so grouty I cannot tell, unless he had been counting on a holiday on Monday, but off he went to Mr. B.'s house and said:—

"That fellow is trying to repair that boiler and may spoil it."

"Well," said Mr. B., "if he can fix it, let him do it; it costs a great deal to have a man come from Providence to do such work."

Well, Monday morning came and so did Mr. B. Steam was up, but there were no leaks anywhere about that boiler. Now I knew that the price the boiler makers charged for an angleiron was $75, then the expense of men and other fixings would bring the cost up to nearly two hundred dollars ($200). When Mr. B. came in that morning, the smile on his face was such that I could count every tooth in his head. He was well pleased, and he well might be, for the whole expense was not ten dollars, besides the fact that the mill did not have to stand idle for a day.

This boss dyer was related in some way to Mr. B. and was apt to tell new comers about what they must do to suit him, or he would "go to the old man, and he would make them hop." I had these stories told to me so often for the first few weeks that I got sick of them, so I spoke out pretty sharp and said:—

"Mr. K., send the 'old man' over some day and see him make me hop."

"Why?" said Mr. K.

"Oh! nothing, only I think there will be some pretty hopping when the 'old man' and I get at it."

A few weeks later, K—— came hurrying into the shop and said the burring machine had broken down and he wanted it repaired right away, as all the wool then in use at that mill had to go through that machine, so I must get it going quick.

I went with him and found an old machine with the cylinder covered with cord harness such as was used for combing the wool from the doffers of first breaker cards. The fans to carry off the dust were on each end of a shaft, the length was the width of the machine, with a fan at each end, and the bearings were fastened to studs fastened to the floor and then boxed over so the dust was blown down through the floor. Well, the machine had surely broken down. It had been neglected, and the shaft had become worn clear down through the lower part of the boxes into the studs, both ends alike. The spiders had got loose on the shaft and the holes were worn out of shape; then the fan had caught on the casing, and the box and fans were all broken in pieces; all this was caused by the carelessness and negligence of boss dyer K——. We carried

the rims to the shop and I commenced to get the pieces apart ready to replace with new work. In about twenty minutes after he left the shop, K—— came back to see if I had got that fan fixed. I had to laugh, for it was a good day's work for two men to do the job. Then he said,—

"Why don't you send a carpenter over to fix the casing?"

"Mr. K——," I replied, "the casing will be all right when the fans are ready to put under it."

I had one of my men at work drilling the holes in for the spiders, and I was at work fitting up new boxes for the shaft. Just then I saw K—— coming towards the shop. I told my man to stop his lathe and go to the vise bench, as if he was at work on another job. K——, coming in, began to fret, saying,—

"Why isn't that man at work on this job?"

I said, "Mr. K——, I wish you would go back to the dyehouse, I will get this job done as soon as possible; you hinder me by coming in so often."

"I will see the 'old man' about this," he said.

"I hope you will," I replied, "and now I want you to stay away until after you have seen him, and then, if you wish, you can come again."

Soon after dinner I saw Mr. B—— coming into the shop. He looked quite pleasant and said to me,—

"The burring machine is broken down."

"I know that," I replied, "Mr. K—— has told me about it every ten minutes since ten o'clock."

"Well," he said, "we are in a great hurry for it."

"I know that," I said, "but, Mr. B——, you see that the bearings for the shaft are all worn out and the fans have been running a long time and are all worn out of true and need boring out larger; the boxes are also worn clear through. Now I am going to make the whole thing new with a larger shaft to fit the fans, and when it is all done, will carry it over, set it in place, box it in and then it will go as good as new."

"I guess you are doing it all right," he replied, and hurried off towards the dyehouse.

About an hour later, K—— came in, but not a word did he say. He stood a while watching us busy at work. Then I said,—

"K——, why didn't you come over and see the 'old man' make me hop?"

He shrugged his shoulders and sniffed, but I never heard any more about Mr. B—— coming over to make me hop. Now Mr. B—— had sense enough to know when he saw the job that it could not be done in one day's work, but I kept at work into the night, and when morning came Mr. K—— found his machine in running order.

(To be Continued.)

—The woolen manufacturers of Aachen, Germany, one of the leading woolen districts of Germany, have abandoned the attempt to introduce the two-loom system into their mills, owing to the opposition of the weavers, who could see no other result of such a change than that of throwing one-half of their number out of work and increasing by just so many the already crowded ranks of Germany's unemployed.

—Judging by the financial report of the United Artificial Silk Mills, Frankfort, Germany, this industry is in a prosperous condition. The output for 1901 was double that of the previous year. The works are running night and day. After charging off $38,000 for depreciation and other purposes, a balance remained sufficient to pay a dividend of 8 per cent. on the capital stock.

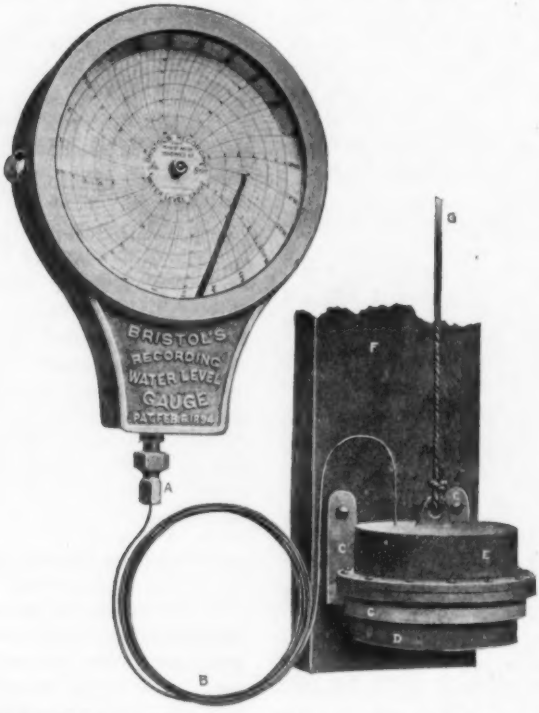
—If all our dreams came true, we would soon cease to dream.—H. Conscience.

—To rail at facts is useless, for it changes none of them.—Mme. de Stael

Bristol's Recording Water Level Gauge.

The Bristol Company, of Waterbury, Conn., are placing upon the market an adaptation of their well-known recording pressure gauge to an instrument for making a continuous record in ink upon a revolving chart, of the rise or fall of the level of water in a canal, reservoir, well, tank, or variation of sea level.

The construction and operation of the instrument will be readily understood by reference to the illustration shown herewith. A represents the union joint by which a flexible capillary tube, B, is connected to the recorder. This connecting tube terminates in the upper portion of the bulb casting, E, and when the instrument is in operation it is immersed to the depth a record is desired. Between the flanges of the upper and lower parts of the bulb, E and D, a flexible diaphragm (convex downwards) of thin sheet rubber is firmly held, inclosing the proper amount of air for the operation of the instrument.



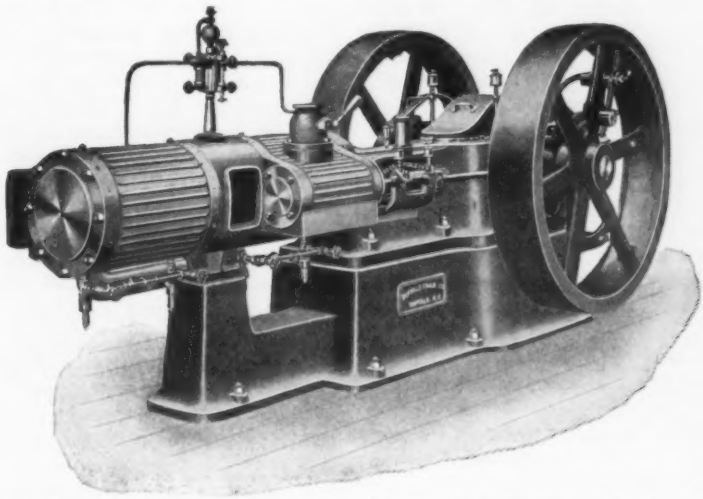
Near the bottom of the lower casting, D, there are several holes for admitting water, the pressure of which acts upon the lower surface of the diaphragm, producing on the inclosed air a corresponding pressure due to its depth below the surface. The variations of the air pressure thus produced are communicated by means of the capillary tube to the recorder. The chart on the recorder is graduated into feet or inches head of water, or of the liquid which is being measured and it may be adapted to almost any desired range.

The upper casting of air-bulb is provided with an eye for a cable suspension. The air bulb is also shown with a flange resting on a ring bracket, C. This bracket is designed to be secured to a plank, F, which may be lowered into the water to any desired depth.

The recorder may be located at any

convenient point for observation, either above or below the surface of the liquid to be recorded. The accuracy of the instrument is not affected by the location of the recorder or by the length of the capillary connecting tube.

An important advantage that instruments of this form have over those of ordinary type which are operated by floats, is that its continuous performance and accuracy cannot be affected by ice in winter.



Buffalo Tandem Compound Engine.

The cut herewith presented gives a general idea of the horizontal tandem compound engine manufactured in the engine department of the Buffalo Forge Company's works. A heavy cast iron sub-base furnishes a solid support to which to bolt the engine bed, and at the same time raises the engine sufficiently for the fly-wheels to clear the floor or foundations. In the case of dynamo direct connection this sub-base may also provide a bed for the generator, and in addition carry the out-board bearing.

The high pressure cylinder is placed in front, bolted at one end to the head cast to the frame. The other end is bolted to a yoke or connection between the cylinders, which also carries the overhung low pressure cylinder. The foot of this yoke rests upon a pedestal extension of the sub-base with a feather or expansion joint connecting the two.

The three movable cylinder heads are so fastened to their respective cylinders as to make feasible their easy detachment with the pistons and rod, if occasion requires. This, with the ready accessibility of all stuffing boxes, is a distinct merit of the Buffalo Tandem Compound Engine. The pistons are single castings cored thin, giving maximum strength with minimum weight, and causing but little wear on the bottom of the cylinders.

The crank shaft and connecting rod are of forged steel, the latter of which is fastened to the crank-pin by means of a strap and box and is securely held by two adjusting lock bolts.

The high pressure valve is of the piston type, while the low pressure end is fitted with a balanced "D" slide valve with a pressure plate. The former valve is under the control of shaft governor, while the low pressure valve may also be driven by the swinging eccentric, or, according to an alternative construction, by a fixed construction, so arranged as to permit

alteration of the cut-off at all times. This arrangement is effected by means of bolting the eccentric sheave in such a manner as to permit change of throw and angular advance, and hence cut-off at pleasure.

The fly-wheel governor for the high pressure side is of the most sensitive type. It is provided with three means of adjustment, so that it may be accurately set to control the engine at any given speed; in addition grease or oil cups are provided on every pin. Indeed, one of the most prominent features of the engine is its thorough system of lubrication.

This engine is enclosed to run in oil, and a positive means of lubrication is thereby furnished for the main bearings, crank-pin, wrist-pin and cross-head slides. An ample supply of oil for the wrist-pin is insured in the Buffalo engine by a cup on the pin, which is filled continuously with oil thrown back from the crank discs, and communicates with the rubbing surfaces.

Pockets or receptacles located within the bed near the crank discs are kept filled with oil while the engine is in motion, and feed the necessary amount of lubricant to the main bearings. Provision is made for returning the oil to the crank-pit after it has been supplied to the various rubbing surfaces. A light polished hood and two side plates give a perfectly oil-tight construction, and being easily removable, afford ready accessibility to the various moving parts. A large sight feed lubricator takes care of the cylinders and valve chests. The very best babbitt metal is used throughout this engine at all bearing surfaces, and adequate means are provided for adjustment and taking up of wear.

This tandem compound engine, containing, as it does, close regulation and efficient lubrication, presents many valuable points, adapting it for lighting and general power service. The direct connected unit with tandem compound engines is especially advantageous. The efforts made of late to attain greater economy in the use of steam has resulted in a rapidly increasing demand for compound engines, and the machine we here illustrate and describe is a product of this demand.

—Among the American exportations of the coals-to-Newcastle kind may be mentioned the recent rather large shipments of ribbon looms to Switzerland. Even the men who buy them express surprise at finding themselves using an imported article in place of one which for generations has been manufactured here. These looms, says our consul at Basel, are much more expensive than those made in Switzerland, even leaving freight and duties out of account; but manufacturers find it profitable to use them because of their greater solidity of construction and the much larger amount of work they do. If it were not for the difficulty of readily adjusting them for the production of different widths and kinds of tissue, they would no doubt soon displace all other looms for weaving plain ribbons. But they are built to produce only one article, or a small number of articles of a particular kind on a large scale, after the American fashion.

—It has been officially stated by the Canadian Government, that no change is to be made in the rates on woolen goods imported into Canada. The woolen manufacturers are clamoring for relief from the flood of woolens that are coming from England under the preferential schedule, and which amount yearly to about $19 per capita of the population of Canada, or ten times the per capita yearly value of woolen goods imported into the United States.

—A service rendered to an honest man is a service to humanity.—P. Cyrus.

DYEING DEPARTMENT

Dye Recipes for April.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

Recipe No. 65.

Yellow on Cotton Yarn.

Chlorozol Yellow G on 100 lbs. cotton yarn.

2 lbs. Chlorozol Yellow G.

(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

20 lbs. Common Salt.

Enter at 170° F., dye at a boil for one hour.

Chlorozol Yellow G produces a very brilliant shade of yellow, which possesses all the characteristics of the direct cotton colors.

Recipe No. 66.

Blue on Cotton Yarn.

Diamine Fast Blue C on 100 lbs. cotton yarn.

Prepare the dye bath with

4 lbs. Diamine Fast Blue C.

(Cassella Color Co., 182 Front Street New York.)

1 lb. Soda Ash.

40 lbs. Glauber's Salt.

Enter yarn at 170° F., bring to a boil and dye at a boiling temperature for one hour. Wash and dry.

Diamine Fast Blue C produces shades possessing excellent fastness to light (equal to indigo), and very good fastness to the other color destroying and weakening properties.

Recipe No. 67.

Brown on Cotton Yarn.

Mikado Brown G on 100 lbs. Cotton yarn.

Prepare the dye bath with

6 lbs. Mikado Brown G.

(C. Bischoff & Co., 88 Park Pl., N. Y.)

150 lbs. Common Salt.

Enter yarn at 170° F., bring to a boil and dye at a boiling temperature for one hour.

Mikado Brown G gives an excellent shade of brown on cotton, and if a standing bath is used, the common salt added after the first bath may be reduced to 10 lbs., and the amount of dyestuff reduced one-fourth.

Recipe No. 68.

Dark Blue on Worsted Yarn.

Acid Alizarine Dark Blue S N on 100 lbs. worsted yarn.

Prepare the dye bath with

5 lbs. Acid Alizarine Dark Blue S N.

(Victor Koechl & Co., 122 Hudson St., New York.)

20 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter yarn at 122° to 140° F., boil 1½ hours; cool bath to 170° F., and add

4 lbs. Chromium Flouride

and boil one hour longer.

Acid Alizarine Dark Blue S N gives a navy blue shade of excellent quality.

Recipe No. 69.

Green on Cotton Yarn.

Direct Green B Extra on 100 lbs. cotton yarn.

Prepare the dye bath with

1 lb. Direct Green B Extra.

(E. M. Thayer & Co., 106-112 Broad St., Boston.

5 lbs. Common Salt.

Enter at 160° F., bring to a boil and dye at a boiling temperature for one hour.

Direct Green B Extra is an exceptionally strong and bright direct cotton color, dyes evenly and will be

found very useful for combinations and as a self color, where particularly clear shades are desired.

Recipe No. 70.

Red on Cotton Yarn.

Brilliant Purpurin 10 B on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Brilliant Purpurin 10 B.

(Berlin Aniline Works, 72 Front St., New York.)

20 lbs. Common Salt.

Enter at 170° F., bring to a boil and dye at the boil for one hour.

Brilliant Purpurin produces a brilliant and desirable shade of bluish red, and possesses all the valuable characteristics of the direct cotton colors.

Recipe No. 71.

Black on Worsted Yarn.

Chrome Fast Black F on 100 lbs. worsted yarn.

Prepare the dye bath with

5 lbs. Chrome Fast Black F.

(A. Klipstein & Co., 122 Pearl St., New York.)

20 lbs. Sodium Sulphate.

2 lbs. Acetic Acid.

Enter at 135° F., and bring slowly to 180° F., and add

1 lb. Acetic Acid.

Bring to the boiling point, boil 10 minutes and add

2 lbs. Acetic Acid.

Boil 20 minutes longer and add

2½ lbs. Sulphuric Acid.

Boil 15 minutes more, then add

2½ lbs. more Sulphuric Acid.

Boil 15 minutes longer and add

1½ lbs. Potassium Bi-chromate, and continue the boiling one-half hour, then wash and dry.

Chrome Fast Black F produces a shade of black of excellent fastness to the common color destroying agencies.

Recipe No. 72.

Green on Worsted Yarn.

Benzyle Green B on 100 lbs. of worsted yarn.

Prepare the dye bath with

3 lbs. Benzyle Green B.

(A. Klipstein & Co., 122 Pearl St., New York.)

20 lbs. Glauber's Salt.

3½ lbs. Sulphuric Acid.

Enter yarn at 170° F., bring to a boil and dye at a boiling temperature for one hour.

For a color of its nature Benzyle Green B is remarkably fast to fulling.

Recipe No. 73.

Blue on Worsted Yarn.

Indocyanine B on 100 lbs. worsted yarn.

Prepare the dye bath with

6 lbs. Indocyanine B.

(Berlin Aniline Works, 72 Front St., New York.)

15 lbs. 30% Ammonium Acetate Solution (made by neutralizing 30% Acetic Acid with Ammonia).

Add Ammonium Acetate to dye bath and bring to a boil, cool a little and add color. Enter yarn, raise to a boil and dye at a boil until the color is fully developed.

Indocyanine will dye without any addition to the bath, but the ammonium acetate is added to neutralize any action of hard water.

About 10% of the coloring matter used remains in the dye bath, and it is advisable to retain the bath for further use.

The fastness of Indocyanine B to light and alkalies is excellent, and very good to the other color destroying agencies.

Recipe No. 74.

Blue on Cotton Yarn.

Diamine Blue C G on 100 lbs. of cotton yarn.

Prepare the dye bath with

2 lbs. Diamine Blue C G.

(Cassella Color Co., 182 Front Street, New York.)

1 lb. Soda Ash.

20 lbs. Glauber's Salt.

Diamine Blue C G produces shades of blue, possessing excellent fastness

to common light destroying and weakening agents.

Recipe No. 75.

Red on Cotton Yarn.

Direct Red No. 9513 on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Direct Red No. 9513.

(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

25 lbs. Common Salt.

Enter at 160° F., bring to a boil, and dye at that temperature one hour.

Direct Red No. 9513 does not turn dark on exposure, stands acids very well, and is valuable for dyeing reds on hosiery and elderdowns.

Recipe No. 76.

Blue Black on Cotton Yarn.

Azomine Black C V on 100 lbs. of cotton yarn.

Prepare the dye bath with

5 lbs. Azomine Black C V.

(United Indigo and Chem. Co., 176 Federal St., Boston.)

30 lbs. Common Salt.

Dye at a boil for ½ hour in as concentrated a bath as possible.

The dyed material is then developed by working it for 20 minutes in a cold bath made up with

3 lbs. Nitrite of Soda.

3 lbs. Sulphuric Acid.

¾ lb. Phenylene Diamine.

Azomine Black C V produces very desirable, fast shades. When a heavier percentage is used, the shade produced is nearer a black. The percentage of dyestuff used in a second kettle may be considerably diminished.

Recipe No. 77.

Heliotrope on Cotton Yarn.

Rhoduline Heliotrope B on 100 lbs. cotton yarn.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

First mordant the yarn with tannin as follows:

Enter yarn into a bath containing 4 per cent. tannin or an equivalent amount of light sumac extract, and work at a temperature of about 140° F., for 20 minutes; then sink in bath for about 12 hours, or over night.

Lift, wring without washing, and work for 20 minutes in a cold bath containing

2 lbs. Antimony Salt.

Then wash thoroughly and dye in a bath containing

2 lbs. Rhoduline Heliotrope B.

2 lbs. Acetic Acid.

Enter at 120° F., bring slowly to 160° F., and dye at that temperature for ¾ of an hour.

Rhoduline Heliotrope B possesses all the characteristics of the basic or tannin dyestuffs.

Recipe No. 78.

Black on Worsted Yarn.

Naphtole Black 2 B on 100 lbs. worsted yarn.

Prepare the dye bath with

8 lbs. Naphtole Black 2 B.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

20 lbs. Glauber's Salt.

5 lbs. Sulphuric Acid.

Enter at 170°, bring slowly to a boil and dye at a boil one hour.

Naphtole Black 2 B produces a blue black shade, which possesses excellent fastness.

Recipe No. 79.

Yellow on Cotton Yarn.

Mikado Yellow C on 100 lbs. cotton yarn.

Prepare the dye bath with

2 lbs. Mikado Yellow C.

(C. Bischoff & Co., 88 Park Pl., N. Y.)

20 lbs. Common Salt.

Enter at 170° F., bring to a boil and dye at a boiling temperature for one hour.

Mikado Yellow C produces yellow shades, which are exceedingly fast to sunlight, acid, alkali, and chlorine.

Recipe No. 80.

Brilliant Green on Worsted Yarn.

Tetrazo Brilliant Green J on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Tetrazo Brilliant Green J.

(New York & Boston Dyewood Co., 85 Beekman St., New York.)

15 lbs. Glauber's Salt.

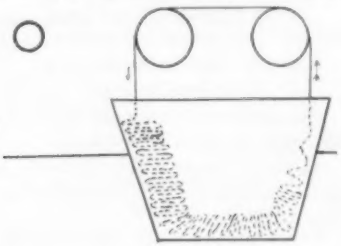
3 lbs. Sulphuric Acid.

Enter just below boil and dye at a boil for one hour.

Tetrazo Brilliant Green J produces an extremely brilliant and even shade of green.

Equipment of a Dyehouse for Cotton Knit Goods on the Roll.

The equipment of a dyehouse having a daily capacity of 1500 lbs. of cotton knit goods in the roll is as follows: One kier, one washer or squeezer, three dyeing kettles, one large extractor, three (if the Johnson vertical type is used) driers; a blower



F.G. 1.

or fan and coil to furnish heat for the dryers.

The dyeing operation is carried on in the following manner: the goods are taken from the stock room, run through a squeezer into the kier, where they are thoroughly boiled out, and, after boiling, they are run into boxes for dyeing.

For the purpose of the dyeing, the goods are divided into strings or drafts of about 50 lbs. each, or 300 lbs. to a six draft kettle. The dye stuff after being well dissolved and strained, is added to the dye bath; the goods are entered at 140 degrees and worked at that heat for half an hour. The salt or Glauber salt is now added, the heat raised to a boil and goods worked one-half hour longer. They are then washed, extracted and dried.

The dyeing is best accomplished in a six draft kettle; any woolen or worsted piece dyeing kettle will serve for this purpose, but there are machines that are constructed especially for knit goods in the roll, such as the Klauder-Weldon roll dyeing machine, that have many good qualities.

The construction and manner of operating these kettles are familiar to most readers of the Textile World, but for the benefit of those who may not be familiar with them we show at Fig. 1 a side view of a kettle having two drums instead of one; this device does not draw the goods as much as a kettle with one drum or reel; the third and smaller drum, shown in the sketch, is used only when running the pieces out of the kettle into the boxes.

After dyeing, the goods are well extracted and sent to the dry room, where they are dried in the following manner: a blower forces the hot air through the goods as they are drawn from galvanized iron pipes to the rolling machines over wires forming a tubular shaped skeleton, which expands the goods as required.

The cost of dyeing underwear in the roll should not be large, as the shades in vogue are what are termed light shades. The cost of dyestuffs and chemicals for light blue should be about 1/2 cent per lb.; for old rose, light tan and flesh color 1/3 cent; light brown one and one-half cents per lb.

The labor cost in a dyehouse properly equipped should not exceed 3/4 cent. per lb.; this includes the wages of a dyer and all other employees; no second hand is needed in a dyehouse of the capacity named. This estimate includes all work from the gray roll in the stock room to the dried roll in the dry room.

The cost for steam and water will vary according to the cost of coal and water in the different localities and other conditions; some dyehouses reckon as high as 1/2 cent per lb. for

steam and water, others as low as 1/4 cent per lb. of stock.

In dyeing knit goods, care should be used that the yarn is made of uniform twist, and from the same quality or blend of cotton, as in some instances where this is not done uneven dyeing results and the different yarns are colored different shades, making rings around the roll.

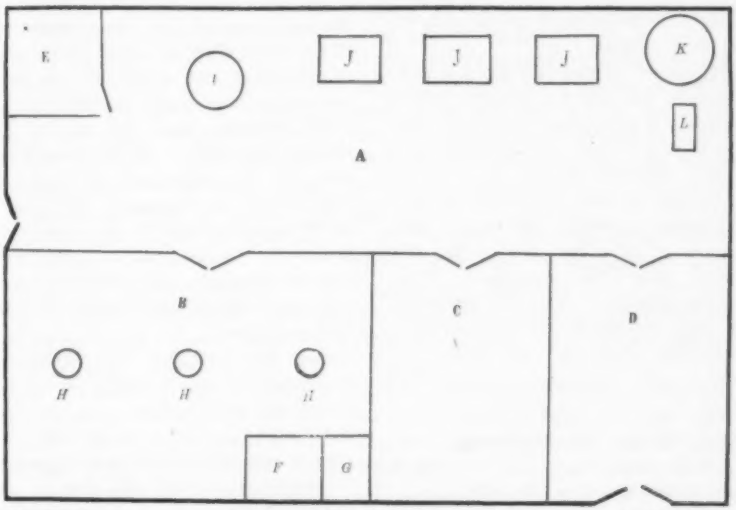
The plan shown at Fig. 2 calls for three dyeing kettles; two will easily handle 1500 lbs. per day, but it is much better to have one kettle for blue shades, one for pink and flesh shades, one for tans and browns. This saves much time, steam and labor, which would be wasted where only two kettles are available. The plan shown here gives a general idea of a dyehouse for knit goods in the roll, and can be changed to suit local conditions.

So much has been written for the Textile World about the flooring, ventilation and construction of dyehouses, that it is not necessary to refer to these points now.

Assuming that a mill is paying 18 cents per lb. for colored yarn and that they can buy the same grade of white yarn at 15 cents per lb., the difference will hardly warrant installing a dyehouse to dye that amount of yarn.

The samples received can be dyed at a drug cost of 1/3 cent for the light blue; flesh, pink and slate and dark blue at 1/2 cent; browns at say 1 1/2 cents per lb.

This drug cost might be cut some if the greater percentage of the goods colored are those of the lowest cost, but the labor cost cannot be cut down much with safety, as a good dyer is essential. Although modern dyestuffs have greatly simplified the dyeing process, it is a mistake to think that an untrained man or one having other duties to perform can successfully run a dyehouse. No dye firm can or does guarantee that their colors will give the same result each time, regardless of the handling, and there are problems arising in the dyehouse from time to time whose solution requires an experienced dyer. Good dyers are cheap at any price, and their place cannot be filled by inexperienced men with the aid of dye formulas. It might seem as if money was saved by running a dyehouse in the manner suggested, but the extra



A.—Dyehouse. D.—Dye and Chemical [Storage.] G.—Boiler. J.—Kettles.
B.—Dry Room. E.—Office. H.—Driers. K.—Kier.
C.—Grey Roll Storage. F.—Steam Coil. I.—Extractor. L.—Squeezer.

seconds, off shades, etc., will easily cause a greater expense.

The raw stock can be dyed in boxes or dyeing machines made for that purpose. These raw stock dyeing machines have a dyeing capacity of from 250 lbs. to 1500 lbs. per load, and can easily turn off two batches per day. If there are many mixes to make and the carding and spinning is done in the same mill, it would be better to dye the entire product in the raw stock. There is no better system for coloring than this; it gives the most uniform results where it is properly carried out, and many of the largest knitters in the country prefer this system to all others.

By the use of the raw stock system of dyeing one can dye any number of pounds of a given color, insuring evenness of shade that cannot be equaled by any other system.

I append an estimate of the amount that might be saved daily on a production of 3000 lbs. per week; this amount might be increased a little, but not enough to warrant the building and equipping of a dyehouse where the yarn can be bought on such a close margin as in the case cited.

Cost of 500 lbs. No. 10s colored, at 18 cents	$90.00
Cost of 500 lbs. No. 10s white, at 15 cents	75.00
Margin	$15.00
Labor cost, one dyer at $3.00	
Labor cost, one man at $1.25	$4.25
Drug cost 3/4c. per lb.	3.75
Steam cost 1/2c. per lb.	2.50
	10.50
Leaving for interest, repairs and profit, etc.	$4.50

In this labor cost we allow three dollars a day for a dyer who does a man's work, and who, with one assistant at $1.25 per day, will do all the work.

A dyehouse turning out 500 lbs. a day in the roll, must have and ought to have three kettles; one kettle for each series of shades; that is, one kettle for brown and tans; one for pinks and flesh shades and one for blues and light slates. It must also have one extractor; one underwear dryer, a blower and coil, and should also have a kier for boiling.

ROGER WILLIAMS.

Dark Shades of Indigo Blue.

The ordinary methods of printing dark shades of indigo blue on wool, consist in first dyeing the wool red, particularly Azo Fuchsine; although it is well known that Azo Fuchsine is destroyed by alkali, yet such treatment of the wool, although afterwards dyed in the alkali vat, resulted in a great increase in the depth of the blue.

Experiments made by one of the leading manufacturers of dyestuffs in Germany to determine the cause of this curious phenomenon, resulted in the discovery that, if the wool was previously treated in an acid bath without dyestuff, the subsequent dyeing with indigo blue gave a much darker shade.

The firm making this discovery recommends that the wool be treated with acid or acid salts. Two hundred and twenty lbs. of wool is boiled for three-quarters of an hour in 80 gallons of water containing 6½ lbs. of sulphuric acid, and then thoroughly rinsed. Bisulphate of soda, ascetic, oxalic or tartaric acid may be substituted for sulphuric acid.—Deutsche Faerber Zeitung.

—It is not necessary to get angry to infuse spirit into affairs.—V. Cherbuliez.

—Address yourselves to young people; they know it all.—Joubert.

—We never live; we look forward to life.—Voltaire.

—The way to please in society is to let each one talk of himself.—Schopenhauer.

A New Process for Cotton Bleaching.

A very interesting bleaching process has been worked on a commercial scale at a bleachworks near Armentieres. The invention of the process is due to M. Henri Lagache, and the principle of it is to set free the hypochlorous acid from the bleach by means of carbonic acid. In its present form the invention is a great success.

Every bleacher has noticed that between the morning and evening of a day's work a gradual diminution takes place in the amount of bleach required for every pound of the same sort of yarn. This, it has been discovered, is due to a gradual acidification of the bath by carbonic acid formed by the oxidation of the coloring matters. But each day when operations are resumed this favorable state of affairs is destroyed by the making up of the bath with more bleach. Moreover, the carbonic acid escapes to a large extent during the night.

These facts inspired Lagache with the idea of using neutralized bleach, containing no free alkali. Then all the carbonic acid formed during the bleaching operation remains free to act from the first beginning of the day's work. The next point to be considered was what would be the best substance to use to do the neutralization. The mineral acids and the usual soluble organic acids are unsuitable, first because it is impossible to regulate their action, and secondly because when the acid is added chlorine is evolved, causing waste and injury to the lungs of the workpeople. The use of dilute acid would thin the bleaching liquid too much, and so waste time and labor.

These drawbacks would not be felt so much if a solid acid was used, such as boric or oxalic, but the use of these is found to be troublesome in practice. The best neutralizer to employ is carbonic acid, the same substance which gradually neutralizes the bleach during the bleaching operation when that is conducted in the usual way. Its action can be perfectly regulated, and it cannot set free chlorine from the bleach, but hypochlorous acid only. It further has the advantage of forming an insoluble compound with the lime, which precipitates out of the way.

The neutralization may be done in a special vessel or in the bleaching baths themselves. The former is the better plan, because the other necessitates piping from a number of vessels instead of one. It must also be remarked that the neutralization makes the bath less caustic, so that tendering of the fibre is to a great extent or even altogether avoided.

To test the comparative value of the new process, identical pieces of calico were bleached by it and the old method. In working the former 132 lb. of bleach were used, and with the latter 153 lb., a saving of between 14 and 15 per cent.

The Lagache process finds great favor with the workmen, as their work being piecework, and the Lagache process being quicker than the ordinary method, their wages are increased.

It is estimated that the process will save a ton of bleaching per week. The process works with mathematical regularity, and nothing unforeseen has as yet been known to occur.—Bulletin de la Societe Industrielle du Nord de la France.

—Reports concerning the cotton mill in Annam indicate that the conditions in this country are not entirely favorable to the industry. In 1890 a mill was built by French colonists at Ksach-Kandal, and since then passed into the possession of the Chinese. It is equipped for handling 199,773 lbs. of cotton per

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—Three difficult tasks; to keep a secret, suffer an injury and employ one's leisure.—Voltaire.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Anniston. The Anniston Cotton Mill is the name of the new company recently formed by Robert Lucas and others. This was reported with details in issue of March 7th.

—*Alabama, Pell City. The new mill contemplated here for some time, as the Pell City Manufacturing Co., now seems to be an assured fact. C. E. Riley and W. R. Sears, of Boston, are mentioned among the list of incorporators. Others are G. W. Pratt, S. Cogswell, A. J. Draper and J. D. Cloudman.

—*Alabama, Piedmont. The Coosa Mfg. Co., advises us that the new mill to be erected, will be equipped with 10,080 spindles for making yarns, average number about 50s, but that they will probably turn it over to a new company.

—Massachusetts, New Bedford. Another fine goods mill is to be erected here, to be known as the Butler Mill. Capital stock, $700,000. Wm. M. Butler will be president. The other officers are not yet definitely settled. Will manufacture fine lawns, dimities, lenos, etc. Land has been purchased on southern side of the city and work will begin at once and expect to begin production early in 1903. W. B. Smith-Whaley & Co., Tremont Bldg., Boston, and Columbia, S. C., are the engineers and architects and have general charge of the work. The spinning mill will be 500 by 150, and will contain 100,000 spindles. Both mule and ring spinning will be used. Combers will be installed. The weave shed will be 436 by 206 and will contain 2000 looms. The power plant and office are separate buildings. Steam will be used for generating electricity, which will be the direct motive power, through motors installed in the different departments. The plans provide for an increase to 150,000 spindles and 3000 looms later. It is understood that some of the same interests in the new Soule Mill are also identified with this new mill.

—*Massachusetts, Uxbridge. The Mumford River Tape Company, under which H. E. Sweet, W. H. Sweet, and W. E. Worster operate, has just started operations, making cotton and silk tape.

—*New Jersey, Malaga. The new mill previously reported at May's Landing that James W. Shea and others were interested in, is located at this place and known as the Knight & Shea Mfg. Co. J. W. Shea is president and superintendent of the concern and A. E. Knight treasurer. They manufacture fancy towelling, operating 37 looms. Goods are sold by J. S. Whiteside, 47 Leonard St., New York.

—North Carolina, Salisbury. The Kesler Manufacturing Co. has decided to increase the capital stock from $125,000 to $187,500 and will erect an additional building, in which they will install looms for using the yarns now made. They now operate 11,232 spindles.

—*Oklahoma Territory, Oklahoma City. The Oklahoma City Cotton Manufacturing Company has been incorporated with capital stock of $50,000, to manufacture cotton batting, stair pads, mattresses, etc. M. L. Turner, C. E. Mitchell and Byron S. Shear are interested in the concern. A new building about 40 by 100 feet, two stories, will be erected for the purpose.

—*Pennsylvania, Trainer. The No. 3 mill of the Trainer Mfg. Co.'s plant, known as the yarn mill, has been sold to T. Ashby Blythe, N. P. Sloan and others. They will incorporate the Trainer Spinning Company to operate same and expect to start operations in a few weeks, making high grade combed Egyptian yarns. T. Ashby Blythe is president of new company, N. P .Sloan, treasurer, and Wm. E. Trainer, superintendent and general manager.

—*Rhode Island, Warren. The Parker Mills of Fall River, Mass., will erect a new weave shed, one story, in which they will install from 1500 to 1600 looms. They will make no additions to the spinning machinery at present.

—*South Carolina, Newberry. The Mollohon Manuafcturing Company has completed erection of the new building and started installation of the machinery equipment, viz.: 11,000 spindles and 300 looms. This company has a capital stock of $200,000, of which Geo. W. Sumner is president and treasurer and E. B. Wilbur, general manager. It was at first thought that 10,000 spindles would be put in, but they have increased the number.

—*South Carolina, Spartanburg. The new cotton mill proposed here and in which A. B. Calvert was previously reported interested, is to be known as the Drayton Mills Company. Capital stock is placed at $250,000. Others interested in the project are: John B. Cleveland, M. F. Floyd, W .E. Burnett and W. A. Law.

Enlargements and Improvements.

—*Alabama, Uniontown. The Ellawhite Cotton Mills, reported in a previous issue to make an extensive addition to the plant, for which the capital stock has been increased, will install 5000 additional spindles in the plant. Work has been started on erection of the new buildings.

—*Georgia, Atlanta. The Elizabeth Cotton Mills are to install 160 looms in the mill for manufacturing sheetings and drills. It is expected that the new looms will be in operation by June 1st.

—Massachusetts, Leominster. Work has been started on the erection of an addition, 128 by 44 feet, three stories and basement, to the United States Thread Company's mill. They propose removing into the new building, when completed, using the old plant for a storehouse, office, etc.

—*Massachusetts, Westboro. The Westboro Weaving Company, now occupying rented quarters, will start work shortly on the erection of a new building, 220 by 52 feet, with an addition for boiler house, engine room and dye house. The capacity of the plant will be doubled when located in the new mill.

—New Hampshire, Suncook. The China Manufacturing Company is building a large addition, 108 by 72 feet, to be equipped with about 120 looms, when completed.

—North Carolina, Cooleemee. The Cooleemee Mills, now operating 35,000 spindles and 800 looms on standard sheetings and drills, will increase the number of spindles to 40,000 and the looms 25 per cent. A new weave shed, 300 by 100 feet, will be erected.

Mills Starting Up

—*Georgia, Gainesville. The Gainesville Cotton Mills, equipped with 25,000 spindles and 750 looms have begun operations, making sheetings and drills.

—*Massachusetts, New Bedford. The machinery in the Soule Mills has been started up.

—*Massachusetts, Westfield. Operations are now under way in the Westfield Braid Company's mill, recently reported purchased by Wm. Salmon, of New York, making cotton and silk braids in connection with his mill in New York. Some of the goods are sold direct and some through Geo. P. Chapin, Philadelphia, and E. M. Wangelin & Co., St. Louis.

—Rhode Island, Chepachet. The East Blackstone Yarn Co., Blackstone, Mass., whose plant has been recently destroyed by fire, is reported to have leased the White Mill at this place, and now operate the carding and spinning departments.

Woolen.

New Mills.

—*Connecticut, Danielson. John R. Davis is president; Cassius S. Chase, treasurer, and Frank Casey, superintendent of the Danielson Worsted Co., recently incorporated with capital stock of $15,000 to manufacture worsted dress goods. They expect to have the plant in operation about June, 1902.

—*Connecticut, Thompsonville. The Upson-Martin Carpet Company expects starting up shortly and will put the looms in operation as quickly as possible.

—*Maine, Oakland. The Oakland Woolen Company is the name of the new concern to establish a new woolen mill here. Concern will be capitalized at $100,000. W. M. Ayer (Oakland) will be president; W. T. Haines (Waterville) treasurer, and Geo. W. Taylor, agent. They propose making men's wear, medium and cheap grades. Plant will contain 3 sets of cards and 44 looms, and dyehouse will be attached. Ethan Allen (N. Y.) will sell the product. About $60,000 has now been subscribed toward the enterprise and as soon as $100,000 is secured, work will start on construction.

—*New Jersey, Trenton. Chas. Moorehouse is superintendent of the new mill started here recently by George Agnew & Sons, on reclaimed wool. Company's post-office address is Titusville.

—*Ohio, Madisonville. Operations have been started up in the new plant of the Madisonville Woolen Mills. Daniel Fallain is superintendent of the mill.

—*Oklahoma Territory, Oklahoma City. A new building, 200 by 60 feet, 2 stories, is to be erected for the Oklahoma City Woolen Mills, recently incorporated with capital stock of $50,000, with John Threadgill, president; T. C. Newby, general manager and Miss M. McKinley, secretary. Woolen cloth, subsequently made into garments at the mill, will be made.

—Pennsylvania, Chester. The Richardson & Ross Manufacturing Company recently formed by Messrs. Jesse H. Ross, of Norristown, B. F. Richardson, Philadelphia, D. H. Ross, Conshohocken and Robert E. Ross, has leased the plant of the South Chester Manufacturing Co., which failed and whose mill has not been running for about a year. They have started operations.

—Pennsylvania, Philadelphia. C. H. Masland & Sons are having plans prepared for the erection of two new mills on property adjoining their plant on Westmoreland Street. The new mills will be used for manufacturing velvet carpets and it is expected that they will be running by November.

—*Washington, Seattle. R. H. Alley is reported to have secured the necessary capital ($1,500,000), for establishing a woolen mill at this place. A company will be organized at once and the mill built larger than was originally planned.

—*West Virginia, Buckhannon. The Buckhannon Woolen Mills are being rebuilt and work of construction is well under way. The new mill will be equipped with 2 sets cards and 14 looms, for making blankets, flannels and woolen skirts as before. Dyehouse is also to be attached to the mill.

Enlargements and Improvements.

—Maine, Skowhegan. Two new mills are to be erected here and leased to the Marston Worsted Mills, by L. W. Weston. About 75 looms will be installed and put in operation with the company's other mills.

——Massachusetts, North Andover. The Brightwood Mfg. Co., which has recently leased more looms, informs that they now operate a total of 80 looms, having added 20 new ones to the plant.

—New Hampshire, Newport. Dexter Richards & Sons are installing 2 additional sets 60-inch cards in the mills. Other machinery is also being put in the plant.

—New Jersey, Gloucester City. An enlargement is to be made to the Fries-Harley Company's rug mill.

—Ontario, Almonte. An addition, 35 by 40 feet, two stories, is to be built to Wm. Thoburn's mill. Part of the mill is to be used for manufacturing purposes and some for an office. Some new broad looms will be installed.

—Rhode Island, Oakland. A new building, 200 by 40 feet, 3 stories high, is under construction for the Coronet Worsted Co. New building is to be equipped with machinery for cloth finishing and to otherwise increase the facilities of the plant.

—Vermont, Bennington. Holden, Leonard & Co. are to build an additional story to their one story annex, and when finished will be used entirely as the finishing room, the lower floor to be used for shipping.

—Wisconsin, Chippewa Falls. The French Lumbering Co. has resumed operations in the mill until November 1st or later. A number of improvements have been made to the plant and additional machinery installed.

Mills Starting Up.

—Massachusetts, Holliston. The Holliston Mills (6 sets) at this place, which have been idle for some time, have been purchased by the Dawson Mfg. Co. of Holden, Mass., who will operate it. The sale was effected through R. B. Denny.

—New York, Ephratah. Preparations are being made by Levi Yanney to resume operations in the mill which has been closed for some time.

Mills Shutting Down.

—*Kentucky, Louisville. As soon as improvements can be made to the plant, operations will be started up in the Eclipse Woolen Mills, by D. A .Chenoweth, whose son, John P. Chenoweth will have charge. About 60 of the jeans looms will be replaced with broad Crompton looms, and both cassimeres and jeans manufactured. Mill will be operated under the old name.

—Massachusetts, Millville. Operations have been resumed on full time in the Lawrence Felting Mill, which has been idle since the rubber works were shut down.

—Massachusetts, Otter River. The branch mill at this place, operated by the Whitney Woolen Company, of So. Royalston, has been closed on account of strike prevailing among the weavers in the American Woolen Company's mills.

—Massachusetts, Oxford. A. Howarth & Son's mill at this place is shut down for an indefinite time. The operatives at the mill are on a strike.

Knit.

New Mills.

—*Connecticut, New Britain. The Linen Underwear Company, a new concern, is now getting ready to install the machinery in building which has been secured for their plant.

—*Georgia, Cedartown. The Cherokee Knitting Mill has been incorporated with capital stock of $25,000. This is undoubtedly the project in which H. F. B. Booth and E. Ottley were reported interested at Griffin.

—*Massachusetts, Chicopee. James T. Ashworth informs us that he has installed machinery for manufacturing knit goods and not mercerized cotton as was given to understand in the first report made. He will make a line of novelties and turf goods, using cotton, wool and mercerized cotton yarns.

—*Michigan, Bay City. The Bay City Knitting Co. expects to start operations in their new mill to be erected, about July 1st. They expect to operate about 100 knitting machines in the new mill. This concern is capitalized at $25,000. Henry B. Smith is president, D. L. Galbraith, treasurer and A. Galbraith, superintendent. They will also build a new dye house, to be operated by steam, while electricity will be used in the main mill. All kinds of hosiery are made.

—*New York, Utica. The LaTosca Knitting Company, capitalized at $6000, making ladies' goods, is really a department of the Mohawk Valley Cap Factory. W. Fred Allen is president; John E. McLaughlin, treasurer and agent, and Geo. J. McLaughlin, superintendent. They operate 25 knitting machines, using steam power. A dyehouse is attached to the plant.

—New York, Utica. The Otter River Knitting Company is the name of a new concern recently formed with capital stock of $5000, to manufacture underwear. F. S. Baker, L. A. Lincoln and W. Schuderer are the incorporators.

—Pennsylvania, Allentown. The Southdown Knitting Company will start work shortly on the erection of a new building, corner Jordan and Tilghman streets. The building will be about 230 by 50 feet, four stories, with boiler and engine rooms in separate buildings. It is expected that the new mill will be completed by September. High grade underwear for ladies, mercerized, lisle and silk, is made.

—*Pennsylvania, Churchtown. The Allen Knitting Company has been formed to operate a knitting mill making half hose. Negotiations are under way for securing the Sheafer property, and if acquired, will start operations at an early date.

—Pennsylvania, Collegeville. Burgess William Todd will start a mill for manufacturing hosiery. A large frame building has been leased from the Collegeville Land & Improvement Co. for the purpose. Machinery is expected for installation about the middle of May.

—*Pennsylvania, Duryea. Plans have been prepared for the new buildings to be erected for the Duryea Knitting Mills Co. The main mill will be 150 by 40 feet, 2 stories, with dye house, 60 by 30 feet, and boiler and engine houses, 25 by 40 feet, one story and 20 by 25 feet respectively. The office will also be in a separate building, 20 by 25 feet, one story.

—*Pennsylvania, Newport. Operations will start about June 1st, in the branch mill being established here by H. A. Romberger, operating a mill at Middletown. Ladies' cotton hosiery will be made at first. Mill will be equipped with 40 knitting machines and 14 sewing machines.

—Pennsylvania, Pittsburg. The O. A. Potts Knitting Company is a new concern recently formed with capital stock of $50,000 to operate a knitting mill for manufacturing hosiery and underwear.

—*Texas, Waco. The Waco Knitting Mills have been incorporated with a capital stock of $50,000, of which $35,000 is paid in. M. L. Garrett is president of the concern, E. Rutan, treasurer; J. T. Tyler,

secretary and Geo. E. Knowles, superintendent. They will manufacture men's, ladies' and children's goods, operating 40 knitting machines. Goods will be sold direct. Steam power will be used.

—Utah, Salt Lake City. The Salt Lake Knitting Works, recently incorporated, have purchased the plant of the J. E. Sherlock Knitting Company, for $11,000. Several thousand dollars will be expended on improvements. J. A. Hendrickson is president of the company and J. R. Smith, secretary.

—*Virginia, Portsmouth. Operations will be started April 15th in the new plant of the Piedmont Manufacturing Co., to make ladies', misses' and children's underwear. This is the concern in which L. B. Whatley is largely interested.

Enlargements and Improvements.

—Connecticut, Windsor Locks. The Medlicott Morgan Co. has recently installed 2 new full fashioned knitting machines and 2 ribbing machines in the mill. They have also made some improvements to the dye house.

—*New York, Utica. The Avalon Knitting Company, which is to erect a new mill, has not yet perfected plans for same.

—*North Carolina, Raleigh. The Raleigh Hosiery Company, which recently made an amendment to the charter for issuing additional stock, will install additional machinery in the mill, increasing the capacity from 500 to 600 dozen pairs hosiery per day.

—North Carolina, Rutherfordton. The Levi Cotton Mills, of which M. Levi is president, will build an addition to the mill in which they will install about 200 or 300 looms. This plant now manufactures only yarns.

—*North Carolinia, Valdese. The Valdese Hosiery Mills, of which John Meier is superintendent and buyer, are building a new boiler and dye house and are in the market for some new machinery. Company operates 32 knitting machines and 2 sewing machines, making men's and ladies' cotton hosiery. Mann & Co. sell the goods.

—Tennessee, Knoxville. The Knoxville Knitting Mills Co. is making an addition to their plant by installing a new dye plant. Other improvements are also being made.

—Rhode Island, Berkley. An additional story is to be built to the Berkley Company's mill for purpose of increasing the capacity of the plant. About 128 new Draper looms will be put in.

Silk.

New Mills.

—*New York, Ogdensburg. The Oswegatchie Manufacturing Co. is the name adapted by the members of the Manhattan Silk Co., who are interested in establishing a silk mill at this place. They have installed 20 looms and spooling machinery in a building for instruction purposes. Ground will be broken for foundations shortly and the building pushed to completion.

—Ohio, Rome. Blakey & Blakey is a new concern which has recently established a silk mill at this place. They will start operations with 16 broad looms.

—Pennsylvania, Altoona. Schwarzenbach, Huber & Co., contemplate doubling the capacity of their branch mill at this place.

—Pennsylvania, Bradford. An addition is to be built to Henry Leon's silk mill here.

—*Pennsylvania, Meadville. The Meadville Silk Mfg. Co., has installed ten new looms in the mill and started operations. As soon as the help becomes more experienced, additional ones will be put in from time to time. Company makes surahs, peau de soi, taffetas, etc.

—*Pennsylvania, Philadelphia. S. S. Fretz Company, manufacturers of umbrellas, parasols, etc., has recently completed the erection of a new building, corner Tenth and Diamond Streets, in which they will install a large number of looms for manufacturing all the cloth used. It is expected to have the new building ready for occupancy June 1st.

Enlargements and Improvements.

—*New Jersey, Plainfield. The Watchung Silk Company is removing its plant to the new mill recently completed, where ten new looms have been added.

—Pennsylvania, Lock Haven. Plans have been made for the building of an addition, 160 by 175 feet, to the Lock Haven Silk Mill.

Mills Shutting Down.

—Pennsylvania, Catasauqua. Operations have been suspended temporarily in the Unicorn Silk Mill until a readjustment of the partnership is made, one of the partners having died recently.

Miscellaneous.

New Mills.

—*Massachusetts, Millbury. The Holbrook Manufacturing Company, capital stock of $30,000, is name of the new concern which will operate the John Rhodes Warp mill recently reported purchased by Francis H. Rice. Mr. Rice is president of the new company and Eben C. Willey, treasurer. A special line of linen goods will be made.

—North Carolina, Fayetteville. The Union Bleaching & Finishing Company has been recently incorporated at Utica. N. Y., under New Jersey laws, with capital stock of $2,500,000, to bleach, dye, print, etc., all materials. They propose building the first plant at this place. James B. Duggan is president; and B. N. Duke, vice-president of the concern.

Mills Starting Up.

—*New York, Delhi. The Delhi Silk Co., of which W. M. & F. C. Gallant, are managers, operate 100 looms, making broad silks. As previously reported Jas. Stern & Co., N. Y., will sell the goods.

Mills Shutting Down.

—*New Hampshire, Manchester. The Manchester Print Works have been shut down for about three or four weeks, to permit removal of the plant to new mill. It is thought that the bleach house may possibly resume operations in two weeks, but nothing definite has been decided upon.

Fires.

—Maine, Lee. J. T. Gifford & Sons' new woolen mill has been destroyed by fire. They had not yet completed the installation of the machinery, but were in hopes of having same ready to start operations June 1st.

—*Maine, Lee. It is doubtful if J. T. Gifford & Sons' woolen mill, recently burned, is ever rebuilt.

—Massachusetts, Fitchburg. Barlow & Cookson's batting mill has been destroyed by fire. The loss is estimated at about $20,000, with an insurance of less amount.

—New Jerseey, Little Falls. George Shutt's dye works at Cedar Grove have been entirely destroyed by fire.

—Pennsylvania, Philadelphia. The Madison Woolen Mills, James H. Lee, proprietor, Emerald and Willard streets, have been destroyed by fire. The loss is fully covered by insurance. Mr. Lee will start at once on rebuilding the mill.

—Rhode Island, Pascoag. The Stone Worsted Mills have been practically destroyed by fire, which started in the picker room. The loss on the machinery is estimated at about $50,000, while that on the building is about $30,000. Plant was insured.

Facts and Gossip.

—*California, Santa Rosa. The Santa Rosa Woolen Mills, for purchase of which eastern capitalists were negotiating, have been bought by Sheideman Brothers, of San Francisco. The mills will continue in operation under the old name.

—*Connecticut, Norwalk. The most important preliminary details relative to the establishment of the silk mill at this place by Joseph Loth & Co., are reported to have been decided upon at meeting held recently with committee in charge.

—*Connecticut, New London. The Otrobando Woolen Co., in the hands of a receiver for the past two years, has been dissolved. The mill is being operated by W. G. Hitchon, of Shewville, Conn.

—Connecticut, South Coventry. John M. Wood has sold his mill property and water privilege to Dr. W. L. Higgins of that place. The mill propeprty included a small building, the main mill having been destroyed by fire, tenement, houses and private residence. It is not known just what Mr. Higgins will do.

—Indiana, Muncie. The Muncie Underwear Company has been organized with capital stock of $25,000. The incorporators are Thomas Henry, general manager of the mills, Saml. Foster and Fred J. Thieme.

—Maryland, Franklinville. It is reported that the Franklinville Cotton Duck Mill, formerly operated by A. A. Blakency & Co., but subsequently secured by the Cotton Duck Trust, will suspend operations.

—*Massachusetts, Charlton City. The Aldrich Manufacturing Co., operating the mill at this place, makes satinets. The company has a capital stock of $6000, Chas. A. Hill, president; L. B. Butler, treasurer and Thomas Heap, superintendent. They operate 2 sets cards and 30 looms, using steam and water power.

—*Michigan, Pontiac. Joseph Nusbaumer has purchased the Pontiac Knitting Works, recently offered for sale, for $25,000, in the interest of local capitalists, who propose operating same.

—*Massachusetts, Taunton. It is again reported that the Cohannet Mills, which have been idle for some time, are to be put in operation, and that 75 combers are to be installed, and a pair of mules taken out.

—Massachusetts, Taunton. The Taunton Dye Works & Bleachery Company is reported to install 6 sets of 48 inch shoddy cards in the mill for making wool and merino shoddies for the trade.

—*New Jersey, Camden. Hodgson Bros., manufacturers of worsted yarns and spinners on commission, operating 2 worsted cards, 2 combs (Bradford system) and 2000 worsted spindles, will be located in the Henry Clay factory, Wilmington, Del., which they recently purchased, after August 1st.

—New Jersey, Hillsdale. As a result of suit brought by S. L. Barnett, against his partners, C. A. Aeschimann, Chas. Laubsch and Geo. F. Hoormann, a receiver has been appointed for the company, known as S. L. Barnett & Co., manufacturing silks. Mr. Barnett claims that the business cannot be profitably run on capital less than $50,000, company having but $20,000, furnished by him.

—New Jersey, Paterson. The Liberty Silk Co. has filed a petition for dissolution.

—New Jersey, Paterson. The Stern-Pohly Company has been incorporated with capital stock of $100,000 by H. Stern, J. N. and F. H. Pohly. This is an incorporation of the firm formerly known as Stern, Pohly & Hermann, from which Mr. Hermann retired.

—New Jersey, Raritan. It is reported that the American Farm & Implement Co. building has been sold to parties who will equip same with machinery for manufacturing silks.

—*New Jersey, Trenton. Albert H. Ryan, of the Somerville Woolen Mills, was the highest bidder at recent sale of the S. K. Wilson Woolen Mills, the bid being for $41,000. The sale has not yet been confirmed by the Orphans' Court of Mercer County.

—*New York, Brooklyn. D. Hirshkind is sole proprietor of the Peerless Knitting Mills, formerly operated by Hirshkind &

Martini. Ribbed and shaker sweaters, gloves, golf hose and jackets are made.

—*New York, Hudson. The Union Knitting Co. and the Harder Knitting Co., recently reported as having been secured by a syndicate will be operated under name of the Union Mills Company.

—New York, Poughkeepsie. The Titus Manufacturing Company's plant has been purchased by John C. Thickens, of Pittsfield, Mass., who has organized a company with capital stock of $75,000, to operate same. Mr. Thickens will be general manager of the new concern. Some additional machinery will be installed in the mill, which will be continued in operation making flannels and ladies' shirt waist materials, but not the cloth, as we understand it.

—North Carolina, Dallas. The Dallas Cotton Mills Company has been reorganized recently. At a meeting held by the stockholders, J. R. Lewis was elected president; E. L. Wilson, vice-president and J. D. Moore, of Gastonia, secretary and treasurer.

—*New York, Little Falls. The Victor Knitting Mills have been resold to the National Herkimer County Bank, for $58,000, the court not confirming the first sale. It is thought that the property will be transferred to the stock company, of which S. A. Bisler is president and treasurer and Victor Adams, manager, to operate the mill.

—New York, Matteawan. A. V. Rockwell's silk throwing mill at this place has been purchased by C. Elirodt, Jr. (Brooklyn) and J. H. Lynch (Paterson), who have formed a co-partnership for operating same.

—North Carolina, Roanoke Rapids. Moses H. and Caesar Cone of Greensboro, N. C., are negotiating for property at this place, where a minimum of 10,000 h. p. can be developed, with a view to purchasing same and erecting a cotton mill of about 2000 looms, with necessary spindles, to manufacture denims.

—*Pennsylvania, Philadelphia. The sale of the Phoenix Mills Co., reported to take place, has been postponed to May 27th. Negotiations are reported underway with the Schuylkill Worsted Mills, for purchasing the mill.

—Rhode Island, Bristol. F. H. Mayhew-operating mills at Paterson, N. J., and Altoona, Pa., is desirous of moving the Altoona plant and has been making investigations as to location, etc., at this place.

—*Rhode Island, Greenville. At a meeting held recently by the creditors of Richard Waterhouse of the Greenville Woolen Mills, it was agreed to accept the proposition of W. A. Guile, assignee, offering 25 cents on the dollar, provided it is accepted within ten days, and also with the understanding that the Smithfield Bank waives its claim for mortgage held on the real estate. The bank has agreed to this.

—*Rhode Island, Hope Valley. It was erroneously reported in a previous issue that the Hope Valley Woolen Mills had been leased by Akers & Taylor, of Charlton, Mass. We now learn that the plant has been secured by F. S. Taylor, C. S. Taylor and G. M. Youngman, who will operate under name of Taylor Mfg. Co. They make woolen overcoatings, suitings, cloakings and skirtings, on 4 sets cards and 62 looms. Goods are sold by Stevens, Sanford & Handy.

—Tennessee, Clarksville. The Business Men's Association is interested in securing the establishment of a cotton mill at this place. E. B. Ely, C. C. Gerhart and M. H. Clark are actively interested in the project.

—*Tennessee, Newport. Hiram Gregg is reported as interested in the new cotton mill proposed at this place.

—Texas, Plano. It is reported that a small concern, capitalized at $35,000, has been organized to locate a cotton mill here.

—*Vermont, Bennington. Olin Scott has purchased the Lasher Stocking Company's mill, which has been in the hands of a receiver, and will operate same as the Scott Stocking Mills. Frank Lasher is superintendent of the mill, which will manufacture cotton, merino and worsted half hose, operating 60 machines. Goods are sold direct.

—Virginia, Newport News. E. S. Brown, formerly interested in a silk mill at Syracuse, N. Y., which has been destroyed by fire, is reported as considering this place in which to establish another plant.

—Virginia, Wytheville. William Krenning, Jr., has purchased three-fourths of the stock in the Wytheville Woolen Mills and secured control of the plant.

—*Wisconsin, Beaver Dam. The Beaver Dam Worsted Mills have been purchased by Peter Beule, M. A. Jacobs, B. Pfeiffer, J. W. Miller and others, who are to put the plant in operation. A company will be formed for the purpose.

—*Tennessee, McMinnville. The stockholders of the Tennessee Woolen Mills, whose plant was greatly damaged by the flood, have decided to go into voluntary liquidation and settle the affairs of the present company. The main building was only flooded about three feet, but other buildings were completely washed away. As previously reported, they will sell the property at public auction July 16th.

—Texas, Waco. Albert Clifton and a Mr. Oates of Charlotte, N. C., are interested in organizing a company to erect a cotton mill here. It is proposed to have a plant with 5000 spindles at first.

—*Wisconsin, Beaver Dam. The Woolen Mfg. Co. started operations May 1st, in the plant of the Beaver Dam Worsted Mills. Company has capital stock of $75,000, with M. A. Jacobs, president; Peter Beule, treasurer and W. A. Harley, superintendent. They are operating 5 sets cards and 27 looms, on fancy cassimeres and overcoatings. H. Bauendahl & Co., sell the goods.

—*Wisconsin, Janesville. An option on the Janesville Cotton Mills, for $30,000, has been secured by W. H. Wheeler, of Beloit, Wis. Mr. Wheeler contemplates putting in an electrical machinery plant.

PERSONAL RECORD.

Cotton.

—Joseph Belfield, for more than 30 years superintendent of the mills of the Conant Thread Co., Pawtucket, R. I., has retired from that position, and he has been succeeded by F. W. Potter, who for the past 10 years has been overseer of the carding department of this mill. Asst. Supt. McIntyre, a brother-in-law of Mr. Belfield, has also retired, and his position has been filled by his son, J. B. McIntyre.

—R. J. Butcher, assistant superintendent of the print works of the Merrimack Mfg. Co., Lowell, Mass., has retired. He entered the employ of the company 53 years ago as an ordinary worker, and his loss will be greatly felt. Before leaving he was presented with a handsome gold watch and chain by the overseers of the corporation.

—Henry E. Brann, superintendent of the Valatie Cotton Mills, Valatie, N .Y., has resigned.

—Elmer E. Bridge, Newburgh, N. Y., is now in the spinning department of the Brighton Mills, Passaic, N. J.

—J. W. Broadnax of Chester, S. C., has accepted a position as overseer of spinning at the Natchez Cotton Mills Co., Natchez, Miss.

—George A. Brocklehurst, late overseer of weaving at the Corr Mfg. Co., Taunton, Mass., is now overseer at the Arkwright Mill, Fall River.

—W. F. Burgess, overseer of ring spinning, has been transferred from the Social Mill to the Nourse Mill of the Manville Co., Woonsocket, R. I.

—Robert Burgess, agent of the Grinnell Mill, New Bedford, Mass., and president of the New Bedford Textile School corporation, will take a position as treasurer of the Slater Mill, Pawtucket, R. I.

—W. W. Bucknell has secured the position of overseer of carding with the Belton Cotton Mills, Belton, Texas.

—E. D. Byrd has assumed the duties of superintendent of the Erwin County Cotton Mills, Fitzgerald, Ga.

—John J. Connell, for many years superintendent of the three Cohannet Mills in Taunton, Mass., has been appointed agent of the Tremont & Suffolk Mills in Lowell.

—Caleb S. Davis, who for the past 12 years has been superintendent and manager of the Woodward, Baldwin & Co.'s cotton duck mills at Warren, Md., has retired from active business. Mr. Davis has been in the cotton milling business for 50 years or more, having been superintendent in the Toronto, Canada; Harrisburg and Philadelphia cotton mills. Richard M. Britton, the present assistant superintendent, will succeed Mr. Davis, and James R. Britton will succeed his brother.

—James Day will take charge of the spinning department of the Renfrew Mfg. Co.'s stone mill at Adams, Mass., succeeding Mr. Rapp, resigned.

George Delaney has resigned as overseer of weaving in the Arkwright Mill, Fall River, Mass., and received a purse of $100 from the help .

—Albert E. Dean, formerly overseer of weaving for the American Flax Co., Indian Orchard, Mass., is now with the Elizabeth Poole Mills, Taunton, Mass.

—W. W. Driver, formerly overseer of carding and spinning in the Revolution Cotton Mills, Greensboro, N. C., has been promoted to the position of superintendent to take the place of Mr. Holt, resigned.

—J. F. Gainer has changed from the Oriental Textile Mills, Houston Heights, Tex., to the Gonzales Cotton Mills, Gonzales, Tex., and taken the position as overseer of weaving, slashing, drawing in and the cloth room.

—A. B. Greenaman has succeeded Joseph Brierly as carder at May's Landing, N. J. Mr. Brierly has gone to Taunton, Mass.

—J. H. Hines, who recently resigned his position with the Cedartown Cotton Co., Cedartown, Ga., is to be the new general manager of the Woodstock Cotton Mill, Anniston, Ala.

—George B. Hiss, at the annual meeting of the directors of the Victor Cotton Mills, Charlotte, N. C., was elected general manager.

—Henry House, formerly of Pawtucket, R. I., is foreman of the tape department of the Warren Featherbone Co., Middleville, Mich.

—J. W. Hawkins has assumed charge of the spinning room at the Eureka Cotton Mills, Chester, S. C.

—Nathaniel B. Kerr, agent of the Boott Cotton Mills, Lowell, Mass., is to resign his position as agent and remove to New Bedford, where he will assume the superintendency of the Soule Mill temporarily, till the completion of the new Butler Mill of that city, when he will assume position of treasurer of that company, having been elected at a meeting of the incorporators held in Boston recently. His son, Louis R. Kerr, has also accepted a position in New Bedford.

—R. D. Kirkland, well known to dyers and also to manufacturers who do their own dyeing and finishing, is now selling goods for the Rome Soap Co. of Rome, N. Y., and when in Paterson he makes his headquarters with David G. Rodgers, 169 Van Houten St. "Kirk" is well known in the trade, and his many friends will no doubt give him a continuance of their patronage.

—C. N. Lee, formerly of the Blackstone Mfg. Co., Blackstone, Mass., is now superintendent of the Readville Cotton Mills, Readville, Mass.

—George H. Miner of North Pownal, Vt., who has been bookkeeper and paymaster of the North Pownal Mfg. Co. for nearly sixteen years, resigned May 1st.

—M. M. Mauney has resigned as superintendent of the Shelby Cotton Mills Shelby, N. C., and has been succeeded W. L. Packard of the Cleveland Co n Mills, Lawndale, N. C.

—John Neild, superintendent of the Soule Mill, New Bedford, Mass., will succeed Robert Burgess as superintendent of the Grinnell Mill. N. B. Kerr, agent of the Boott Mill, Lowell, will reutrn to New Bedford and assume the superintendency of the Soule Mill. It is understood temporarily, until the completion of the Butler Mill.

—P. H. O'Neill has left the Sibley Mfg. Co., Augusta, Ga., and accepted a position as overseer of weaving at the Indian Head Mills, Cordova, Ala.

—Samuel Porter has retired from the Nonotuck Silk Co., Florence, Mass., after over 49 years' service in the establishment.

—William H. Parkyn has resigned as overseer of bleaching for the Franklin Bleaching & Finishing Works, Philadelphia, Pa.

—Edward Philips of Bristol, Conn., is the successor of E. Walter Billings, overseer of the carding room of the Danielsonville Cotton Mills, Danielson, Conn.

—Benjamin Russell, who recently resigned his position as overseer of frame spinning with the Danielsonville Cotton Co., Danielson, Conn., has been succeeded by John Lynch, formerly employed in a mill at Hyde Park, Mass.

—Edwin Smith, who has been in the employ of the Canadian Colored Cotton Co., for the past two and a half years, has secured the position of overseer of the spooling and spinning department of the Dominion Cotton Mill Co., Kingston, Ont.

—Samuel Simister was presented with a gold watch upon his resignation from the spinning department of the Wampanoag Mills, Fall River, Mass. He has gone to the Shove Mills, in that city.

—L. M. Short, night superintendent of the E. L. Shuford Mfg. Co.'s plant, has changed to a similar position with the Alpine Cotton Mills, Morganton, N. C.

—J. A. Thompson, who was formerly overseer of spinning with the Willingham Cotton Mills, Macon, Ga., has accepted the position of overseer of spinning with the Eagle & Phenix Mills, Columbus, Ga.

—Charles Uren, foreman in the silk mill of George Singleton, Dover, N. J., has been transferred to the Wadesboro, N. C., mill, over which he will be superintendent. His brother succeeds him at Dover.

—O. Vincent has resigned as overseer of weaving with the Natchez Cotton Mills, Natchez, Miss., to accept a similar position with the Kosciusko (Miss.) Cotton Mills

—James Wrigley, of New Bedford, Mass., overseer of carding in the Bennett and Columbia Mills, has resigned from the New England Cotton Yarn Co.

—J. W. White has left the Manchester Mills, Macon, Ga., and accepted a position as overseer of carding with the McColl Mfg. Co., McColl, S. C.

Woolen.

—Oliver Ainley has been engaged by the Hanover Woolen Mfg. Co., Hanover Ill., as overseer of weaving.

—John W. Ashworth has accepted the position of overseer of spinning at the A. D. Gleason mill, Gleasonville, Mass.

—James Brown succeeds George Charlesworth as night overseer of the Indian Spring Woolen Mill in Madison, Me.

—Thomas Crocker is superintendent of the plant of the United Waste Mfg. Co., Troy, N. Y., dealers in all kinds of wool, cotton and other wastes.

—Frank Casey, until recently assistant superintendent and designer in the Kennebec Mill, Fairfield, Me., will be superintendent of the mill to be operated in Danielson ,Conn., by the Danielson Worsted Company.

—E. S. Creamer, of Bennington, Vt., has assumed the duties of designer at the Coronet Worsted Co., Oakland, R. I.

—Sam Driver, who has recently been in the South, is now with Amos Abbott & Co., Dexter, Me.

—P. O. Fisher has resigned as superintendent of the Virginia Woolen Mills, Winchester, Va., owing to ill health. Mr. Hunt of Rochester, N. Y., succeeds him.

—Hugh Gallagher is overseer of spinning for Folwell Bros. & Co., Philadelphia, Pa.

—C. R. Hidel is now overseer of weaving at the Dalton Woolen Mills, Dalton, Mass. He went there from Pittsfield, where he was in business.

—Thomas Heines has accepted the position of overseer of carding for the Southwark Mills Company, Philadelphia, Pa.

—S. G. Hall, of Worcester, Mass., is now at Bound Brook, N. J., having charge of 108 looms, the dressing and burling and sewing.

—James Hilton has resigned his position as superintendent for F. W. Walter & Co., shoddy manufacturers, Philadelphia, Pa.

—Lorenzo Jones, of Auburn, now has charge of the carding department at the woolen mill at Oxford, Me., George Houghton having resigned on account of poor health

—George S. Lowe is overseer of spinning at the plant of F. J. Shebel, Philadelphia, Pa., woolen and merino yarn spinner.

—James Mack has been appointed superintendent of the Royal Worsted Mill in Harrisville, R. I. He succeeds W. H. Bailey, who was connected with the Lippitt Woolen Mill in Woonsocket, R. I., about a year ago.

—Frank Milner, for the past 22 years overseer of the dressing room of the Carolina Mills, Carolina, R. I., has resigned, and his place has been filled by Alphonzo V. Tucker, promoted.

—James H. McDougall of Milford, Mass., intends going to California, where his brother, William N. R. McDougall, is superintendent of the Napa Woolen Co.'s 5-set mill in Napa, Cal. He has recently been janitor of the high school building at Milford, but will re-enter the woolen manufacturing business, having accepted the position of assistant superintendent in the Napa Woolen Co.'s plant, under his brother.

—William Owen has secured the position of overseer of carding for the Madison Woolen Co., Madison, Me.

—T. N. Parent, after being with the J. D. Clark Co., Rochdale, Mass., over two years as carder and spinner, has resigned to accept a similar position with the Nasonville Woolen Co., Nasonville, R. I., and upon his leaving Rochdale was presented by his help with a meerschaum pipe.

—Thomas Rawley, who has been designer for the Putnam Woolen Co., Putnam, Conn., has resigned to accept a position as superintendent of a woolen mill in Claremont, N. H. William Lacey of Pascoag, R. I., will succeed Mr. Rawley.

—Walter Scott, recently of Pittsfield, Me., has accepted a position as designer under Thomas Walker, Jr., superintendent of the Devonshire Mills, Goff's Falls, N. H.

—Joseph Todd, overseer of carding for William Thornton, carpet yarn spinner of Philadelphia, has resigned to accept a similar position in the carpet yarn plant operated by John F. Lodge & Sons, that city. He takes the place of Charles O'Hara.

—E. T. Woolley has succeeded G. E. Thorstensen as manager of the Ogden Woolen Mills, Ogden, Utah, the latter having resigned to accept a similar position with the Salt Lake Knitting Mill.

—E. H. Witt, formerly with Connor Bros., Holyoke, Mass., is now with the Hartford Carpet Corporation, Thompsonville, Conn. He succeeds James Bevins.

—Andrew E. Williams, Falconer, N. Y., has been engaged by Shuler & Benninghofen, Hamilton, O., as assistant carder.

—Paul G. Wetstein, formerly of Westerly, R. I., has succeeded E. Dudley as overseer of weaving at the Merchants Woolen Mill, Dedham, Mass.

—J. H. Evans is no longer with the Fergus Falls Woolen Mills at Fergus Falls, Minn., having severed his connection with that concern. We are informed that he had no interests in the business, nor was he its manager.

Knit.

—William Davis is in the employ of the Mohawk (N. Y.) Knitting Mill as boss machinist.

—Frank Fenner, of Little Falls, N. Y., is with the Kendall Knitting Co., Utica, as boss finisher.

—Mr. Farnsworth of Wilton, N. H., has been engaged by Walter Aiken's Sons, Franklin Falls, N. H., as boss carder.

—Harry Green, boss dyer at the Commercial Knitting Mill, Cohoes, N. Y., has resigned, and gone to Bennington, Vt., to accept a position in a similar capacity.

—J. M. Green, recently connected with the Rossville Hosiery Mills, Rossville, Ga., as finisher, has been engaged as superintendent by R. J. Fisher, Athens, Tenn.

—Gilbert Harris, formerly overseer of knitting at the Fitch Mfg. Co., Thornton, R. I., is overseer of knitting at Stretton & Sons' mill, Stoughton, Mass.

—William Henderson, late of Little Falls, N. Y., has accepted the position of overseer of carding with the New Britain (Conn.) Knitting Co.

—William Krenning has been elected treasurer and general manager of the Wytheville (Va.) Woolen & Knitting Mills Co.

—John Lambert, formerly overseer of carding at Lynchburg, Va., is now filling a similar position with the Victor Knitting Mills Co., of Cohoes, N. Y.

—W. G. Loveland, Ware, Mass., has accepted the position of overseer of carding with the Norfolk & New Brunswick Hosiery Co., New Brunswick, N. J.

—William T. Martin, for thirty-seven years superintendent of the Lawrence Hosiery Mill, Lowell, Mass., retired on May 1st. Everett H. Walker, who has become general superintendent of the Lawrence Hosiery Mill, went to Lowell from the Amory Mills in Manchester about fifteen years ago and accepted a position as overseer of the winding room. This position he had since held, the responsibility of having charge of the spinning department having been given to him three years ago.

—D. G. McLaren, formerly superintendent of the Virginia Textile Co., Lynchburg, Va., is now with the Commercial Knitting Mills Co., Cohoes, N. Y.

—Thomas McClintock, formerly boss designer for A. H. & C .B. Alling, Derby, Conn., is now filling a similar position at the Victor Knitting Mills Co., Cohoes, N. Y.

—Andrew Mason has removed to Waterford, N. Y., having resigned his position with the Bennington Knitting Co., Bennington, Vt.

—P. F. O'Connor has been succeeded as superintendent of the New Britain (Conn.) Knitting Co., by Mr. Scott of Amsterdam, N. Y.

—W. A. Parrish, who has been for a number of years in the employ of the Glastonbury (Conn.) Knitting Co., has accepted a position with the Hartford Blower Co., Hartford, Conn., having taken an interest in the latter company.

—James Robinson, who for years has been foreman of the knitting and spooling departments of the Plainville Mfg. Co., now the Bristol Mfg. Co., Plainville, Conn., has retired after thirty-two years of continuous service. Mr. Robinson retires with the hearty good will of his employers and employees. He intends to take a well-earned rest and will not for some time at least engage in active business.

—Nicholas Stevens, overseer of carding for the Greene Knitting Company of Amsterdam, N. Y., who has been ill for some time, has resumed work.

—William H. Taylor, Utica, N. Y., has accepted the position of overseer of dyeing with the Beaver Knitting Mill, Hudson, N. Y.

—James Waterfield has been engaged as superintendent by the Michigan Central Woolen Co., Centreville, Mich., manufacturers of men's high grade underwear and sleeping garments.

Deaths.

—J. S. Gay, president of Gay Bros. woolen mills, Cavendish, Vt., died last month. At the age of 18 he was in charge of a large card room in Rhode Island. In 1869 he, with his father and next younger brother, started a small woolen mill in Tunbridge, Vt., and manufactured cloth and woolen yarn till the spring of 1887. Then they moved their business to Cavendish, Vt., and started up 20 looms. Since that time the business has increased continually, and in the spring of 1900 it was found necessary to erect an addition, which is well filled with machinery and furnishes employment to about 100 hands. For several years Mr. Gay had been in poor health and spent most of the winters in the South. It was while there that he was taken seriously ill and died on his way home.

—William Johnson, aged 73 years, one of the founders of the Johnson Woolen Mills, near Bay View, Md., has deceased.

—Farwell P. Holden died at his home in Penacook, N. H., recently, after a short illness of grip. Mr. Holden was president of the Concord Mfg. Co. and manager of its woolen mills at Penacook.

—George A. Brakefield, superintendent of the Utica Cotton Co., Capron, N. Y., died recently, at the age of 43 years. He had worked his way up from back-piecing, and was held in high esteem by all the employees of the mill.

—William Howe, aged 88 years, died at his home in Holden, Mass., recently, of which town he was a lifelong resident. In 1868 he formed a partnership with Maj. T. E. Hall, and engaged in the manufacture of woolen goods. This partnership continued but two years, when M. V. B. Jefferson, Mr. Howe's son-in-law, purchased the interest of Mr. Hall, and the business was continued with success 26 years under the firm name of Howe & Jefferson. In 1886 Mr. Howe retired.

—David J. Hamburger, prominently connected for many years with the wool interests of this country as a dealer, and more recently as senior member of the firm of D. J. Hamburger & Sons Co., Albany, N. Y., died in that city early last month, aged 67 years. More than forty years ago Mr. Hamburger was located in the wool business as a dealer at Syracuse, N. Y., where he remained continuously until he removed to Albany, where he secured an interest in the wool firm of the Barnet Bros. & Aufsesser Co., of that city, whose wool business Mr. Hamburger subsequently purchased, when Barnet Bros. & Aufsesser embarked in the knitting business, at Troy, N. Y. A widow, four sons and two daughters survive him.

—John Chace Randall, long identified with the well-known house of John H. Pray & Sons Co., Boston, died recently. He entered its service at the age of 14 years, and when the firm became incorporated in 1900 he was chosen its treasurer, which position he held at the time of his death. His death is mourned by a large circle of social and business acquaintances.

—William C. Stehle died April 4th at his residence in Philadelphia, aged 50 years. He was born at the Falls of Schuylkill and was for a long time connected with the calico printing industry. Since 1886 he was a member of the firm of Brehm & Stehle, conducting the Allegheny Dye Works.

—Edward Payson Smith, a well known woolen manufacturer, died at his home in Enfield, Mass., last month. He was a native of Granby, where he was born Sept. 3, 1832. At the time of his death, Mr. Smith was the senior member of the Swift River Company. He leaves a wife and one brother, Henry M. Smith, of Enfield.

—William C. Sibley, one of Augusta's best known and oldest citizens, died April 17. For about a month he had been ill with pneumonia. Although prepared for college at the age of 16, he clerked in the general store of his father, at Hamburg, S. C., continuing in that capacity for five years, where he was made a partner. In 1870 he accepted the presidency and built the Langley Mfg. Co., of Langley, S. C., resigning in 1889 in order to devote his entire attention to the Sibley Mfg. Co., Augusta. In 1880 he was made president of this company, and the mill was built under his supervision for the manufacture of colored and other goods. He was for many years a director in banks and other prominent institutions in Augusta, and in all personal and social excellences, Mr. Sibley was a model citizen.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the compositionof yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Test for Fastness of Colors.

Editor Textile World:

Is there any chemical test of the fastness of colors to sunlight? The yarn we use for our goods must stand exposure to sun and rain, and be absolutely fast. The only means we have for testing is by giving them out-door exposure, which takes from four to eight weeks. We desire some quicker method.

Schnell (230).

There is no chemical test that will determine whether colors are fast to sunlight or not. The only method of testing the colors as to their fastness to sunlight and weather is to expose them out-doors, and await results. Even this is an unreliable method, since the cloth becomes soaked with rain and then is exposed to the sun while wet; this is a treatment that goods in ordinary wear are not subjected to, and it is very severe upon colors of any kind. We publish in the Dyers' Supplement of the Textile World, sixteen (16) dye recipes accompanied by samples of the colors. These recipes give a statement of the degree of fastness of the different shades to washing, sunlight, etc. Dealers in dyestuffs are very fair in regard to their claims for the colors they deal in, and we believe there is not a firm that will make any claims as to fastness of color which cannot be substantiated in practice.

Size of Single Yarn in Twist.

Editor Textile World:

We desire to twist single No. 20 cotton with another thread of cotton to make the twist equal to a single No. 12. How is the size of the second thread calculated?

Equivalent (226).

To calculate the size of yarn that, twisted with another thread of a given size, will make a twist of a required weight, is as follows:

Multiply the number of the single yarn by that of the twist required, then divide this product by the difference between the two numbers.

Applying this rule to the case presented by Essex, we have:

$20 \times 12 = 240$.

$20 - 12 = 8$.

$240 \div 8 = 30$, number of yarn required.

The above rule is obtained from the following formulas, in which

b = given size of yarn (20).

c = given size of twist (12).

x = size of yarn to be twisted with (b).

(c) being the length of one pound of twist we have the weight of each single thread represented as follows:

$c \div x$ = weight of (x).

$c \div b$ = weight of (b).

Hence

$(c \div x) + (c \div b) = 1$.

$c\ b + c\ x = x\ b$.

$c\ b \div x = b - c$.

$(c\ b) \div (b - c) = x$.

No allowance is here made for the take-up in twisting.

Lint and Seed Cotton.

Editor Textile World:

What are the proportions of lint and seed cotton obtained from the cotton as it comes from the field?

Lint (233).

About one-third of the weight is lint. The percentage varies considerably owing to the presence of moisture in the cotton, which of course reduces the proportion of both lint and seed cotton as compared with the weight as it comes from the fields.

Mill Rules.

Editor Textile World:

Where can I get a set of rules and regulations for the guidance of operatives working around moving machinery, with a view of preventing accidents?

Accident (235).

We do not know of any general regulations of this kind. Warning notices to prevent operatives from unduly exposing themselves to danger around moving machinery are generally drawn up to

suit the particular mill and machinery to which they are to be applied.

Standard Sizes of Ladies' and Children's Underwear and Hosiery.

Editor Textile World:

Where can I get a list showing the standard sizes for ladies' and children's underwear and hosiery?

Size (234).

The February, 1902, issue of the Textile World contains such a list.

Fireproof Cloth.

Editor Textile World:

Where can I secure information in regard to the process of rendering cloth fireproof?

Fireproof (232).

The process of fireproofing cloth is treated in Polleyn, Die Appreturmittel, price $2.00. Fifteen recipes are given, as well as a general treatise on the subject.

Dyeing Cotton Knit Goods in the Roll.

Editor Textile World:

We believe, from what we can gather, that it would be for our interests to do our own dyeing, and would like to have you give us information regarding the equipment for a dyehouse for handling cotton knit goods in the roll. We are today buying colored yarn and do not want to bleach our goods. We are paying about 3 1/2 cents per lb. more for colored, and 2 1/2 cents per lb. more for mixes than we can buy white yarn for. We use about 3000 lbs. of yarn per week. We enclose samples of the different shades we are using.

Marion (236).

The above question has been submitted to a practical dyer, and his views upon the problem are given in another part of this issue.

Cotton and Wool Mixtures.

Editor Textile World:

We are having trouble with our mixtures of cotton and wool, composed of 30 per cent. cotton and 70 per cent. wool. The same grade of wool spun to the same size, 4 runs, works well when not mixed with cotton. When 30 per cent. of the batch is cotton, the roving from the card is twitty, the work spins badly. The yarn is twitty and tender, runs badly in the loom, and the goods are specky. What is the trouble?

Essex (225).

From the statement made by Essex, we judge the difficulties are caused by improper mixing of the stock in the picking room. The wool should first be oiled and run through the picker to distribute the oil evenly. Then the cotton should be mixed with the oiled wool. If oil or water gets on the cotton, the fibres adhere to each other, making the material lumpy. The picker cannot open up the cotton and mix the fibres with the wool when the former is in this condition. The lumps enter the card, which does not open them up completely. The consequence is that the wool and cotton are irregularly distributed throughout the yarn, causing the troubles complained of by Essex.

New Publications.

Dyers' Materials, by Paul Heermann, Ph. D.; Scott, Greenwood & Co., London; price $2.50. This is a translation of a German work treating of the examination of chemical materials used in the textile industry, and giving in compact form the most valuable methods and data for the use of dyers and technical chemists. The book is intended in the first place for chemists, and presupposes the principles of chemical analysis; frequently, it only indicates the common methods, bestowing the chief attention on specific articles and methods of examination. The following abstract of the table of contents gives a good idea of the scope of the work: 1. Indicators; Standard solutions; Reagents; 2. Water in textile fibres; 3. Inorganic Materials; 4. Organic Compounds. Appendix: Atomic and Molecular weights; Gravimetric and Volumetric equivalents.

Two plates are inserted at the end of the book. The first contains an illustration of the microscopic appearance of the textile fibres, and the other the microscopic appearance of the different varieties of starch. Orders may be sent to this office.

Modern Motives for Designers; by F. Baenziger; Art. Institut Orell Fuessli, Zurich. Price $10.

This work consists of 24 elaborate designs on plates, 12½ in. by 17½ in., enclosed in a portfolio. Each design is capable of furnishing to designers many different suggestions that may serve as a basis for new patterns. The designer of these motives is well known in Germany through similar work, and while following the general trend of modern style he has not lost sight of nature, the true guide of the artist.

On these twenty-four sheets are found suggestions for designs suitable for woven and printed fabrics, hand embroidery, wall decorations and carpeting.

The work can be imported through this office, where a copy may be seen.

Technology of Jacquard Weaving; by Franz Donat; A. Hartleben, Wien; price $2.00.

This is the latest addition to the already numerous list of valuable handbooks of textile subjects, that have been issued from the same house. It begins with definitions of the terms used in jacquard weaving, takes up successively the various divisions of the subject, and ends with chapters on the construction of looms, damask weaving and decorating the fabrics by embroid-

ery and lappet processes. The various styles of English and German looms are described. Following is an abstract of the table of contents, which will give an idea of the ground covered by this work: Parts of a Jacquard loom; Numbering; Classification and kind of looms; Arrangement; Tying-up; Division according to the shed; Operation; Raising the warp; Card cutting and punching; Copying; Lacing; Movement of the cards; Open shed; High and low sheds; The Verdol machine; Damask; Embroidery loom; Lappet.

Not the least valuable feature of this work is the illustrations, of which there are 188. The reading matter occupies 76 pages and is in German.

Bleaching Cotton Cloth in the Open Width; by Dr. Friedrich Carl Theis; 122 illustrations; M. Krayn, Berlin; price $2.50.

The object of this work is to present in systematic order a complete statement of the present condition of the art of bleaching cotton cloth in the open width.

The first part treats of the mechanical operations; the second, of the chemical processes. It is the first time that a comprehensive treatise on the subject has been compiled, and the work will undoubtedly prove of great value not only to bleachers, but also to builders of bleaching machinery. The numerous illustrations in the mechanical section add much to the value of the text which is in German.

Business Literature.

The Lowry Bale; The Planter Compress Co., Boston, Mass.

This circular contains much interesting information regarding the round bale, and particularly the Lowry bale. Probably the most interesting feature is found in the numerous illustrations, which not only show the Lowry bale in its progress from the compress to the docks on either side of the ocean and to the mill, but also includes views of both the round and square bales side by side, giving a striking illustration of the advantages of the round form. Many letters from manufacturers in Europe and this country show in what high esteem the Lowry bale is held. A copy of this pamphlet will be sent to anyone interested, upon application to the Boston office of the company.

Buffalo Portable Forges and Blacksmith Machinery.

The Buffalo (N. Y.) Forge Company, inventors and manufacturers of the well known Buffalo Forges, have just issued a new catalogue. It is a handy little book, envelope size, illustrated with halftone engravings throughout, describing in detail the many different types and sizes of their portable forges, for blacksmiths, machinists, boiler makers, tool makers, riveting, jewelers' work, light bench work, railroaders and prospectors, also bellows, brazing and melting forges and folding forges for marine service, Buffalo hand blowers, power and hand drills, punches, shears, bar cutters, tire benders and tire upsetters. This catalogue will be mailed to interested parties upon application.

The "A. B. C." System of Mechanical Draft.

The American Blower Co., Detroit, Mich., have issued a booklet showing a view of the Lacombe Electric Company, Denver, Colo., and a copy of a letter from that company, in which they state the satisfactory experience they have had with the well known "A. B. C." system of mechanical draft.

Ventilators.

A new 16-page ventilator catalogue of the Buffalo Forge Company of Buffalo, N. Y., fully illustrated with halftone drawings, describing in detail the many different types and sizes of ventilators manufactured by the above company, is now ready, and anyone interested can secure a copy by writing for it. This company with their quarter century of experience in the heating and ventilation of buildings of all classes, has become thoroughly in touch with the conditions which make stationary ventilators an efficient and most desirable apparatus. While the requirements of a stationary ventilator are somewhat hard to fulfil, they have been perfectly met by the new Buffalo Improved Ventilator. Their value, when in use with the fan system, is too often underestimated. In certain cases they are alone amply sufficient for proper ventilation. These ventilators are built of heavy gauge iron, and will resist any strain of reasonable magnitude they may be subject to. Many specially interesting types are shown in the catalogue.

Recording Volt, Ampere and Watt Metres. The Bristol Company, Waterbury, Conn.

This is a 28-page catalogue giving an illustrated list of their electrical recorders covering their complete lines of recording volt, ampere and watt metres for both alternating and direct currents. Copies of this catalogue will be sent to anyone interested upon application.

Automatic Weaving Mechanism. The American Loom Co., Readville, Mass. A pamphlet gives a description of the various weaving appliances manufactured by this company, and which includes the Harriman loom, electro mechanical warp stop, temple and hand threading shuttle. The Geo. W. Stafford Co., Readville, Mass., manufacture these mechanisms under license from the American Loom Company.

New Color Cards.

Farbenfabriken of Elberfeld Co., 40 Stone St., New York. Discharge styles on velveteen. This card shows 9 samples printed by the discharge method with tin and combinations of Katigen and Benzidine colors.

Farbenfabriken of Elberfeld Co., 40 Stone St., New York, have issued an elaborate color card containing 74 shades dyed with the Diazo colors, 36 with the Benzo Nitrol colors, 88 with the Benzo Chrome colors, 36 with the Katigen colors. Full directions for coloring are also given.

Diphene Blue B and R. Berlin Aniline Works, 72 Front St., New York. This card shows five samples of cotton cloth printed with Diphene Blue B and R in combination with other dyes.

Zambesi Pure Blue 4B. Berlin Aniline Works, 73 Front St., New York. This card shows seven samples of cotton cloth printed with Zambesi Pure Blue 4B, in combination with other dyes. Full directions are given for the use of these dyes.

Benzo Fast Pink 2 B L. Farbenfabriken of Elberfeld Co., 40 Stone St., New York. This card shows four samples of cotton goods dyed or printed with Benzo Fast Pink 2 B L.

Naphtogene Blue 2 R. Berlin Aniline Works, 72 Front St., New York. On this card are shown six samples of cotton yarn and two of cotton cloth dyed with Naphtogene Blue 2 R, and developed with Beta-Naphtol. Half of the samples are mercerized.

Sulphur Colors on Raw Cotton. Sykes & Street, New York.

This book contains 100 samples of raw cotton dyed with sulphur colors of various shades ranging from delicate stains to black, and attractively mounted upon cards in a convenient form for reference. A copy should be in the hands of every dyer, as it enables him to quickly refer to any shade desired and learn at a glance what dyestuffs processes are required to produce it.

Woolen Cloth with Cotton and Ramie Checking Threads.

Farbenfabriken of Elberfeld Co., 40 Stone Street, New York, have issued a sample card showing 94 samples of cloth made with wool and worsted as a groundwork, and checked with cotton or ramie. These goods are so piece dyed that the cotton or ramie is left white, producing some very attractive stripe and check effects.

This is a method whose use will, undoubtedly, be extensive as manufacturers become familiar with it. To secure the desired effect the dye bath must be specially prepared, and the card referred to gives full directions and formulas for dyeing the goods. We advise manufacturers to secure a copy of this sample book.

Removal Announcement.

April 21st, 1902;

The Massachusetts Fan Company, manufacturers of blowers, fans, dry kilns, etc., desire to announce the removal of their factory and principal office from Boston to Bedford St., Riverview Station, Waltham (a suburb of Boston). The city office will remain as at present at 53 State St., Boston. In order that prompt service may be rendered address telegrams and mail to Waltham, Mass. The main office telephone is 176-3 Waltham; the Boston office telephone, 2187-3 Main.

Opening and Folding Machines.

A practical man calls our attention to the fact that the machine briefly described in our New Machinery and Processes Department of April issue, for opening and folding cloth, which is being placed on the market by Elkanah Hoyle & Sons, of England, is not suitable for cloth coming from string washers and fulling mills, and to use it for such a purpose would be likely to prove a serious detriment. The idea of a machine of this type is to avoid creases or breakage of fibre, whereas, he thinks that this apparatus would tend to increase that. The builders lay special stress on its simplicity, but that seems to be gained at the expense of space. In this country, simple and better apparatus is used for this purpose, of the type built by Birch Bros. of Somerville, Mass., whose name is closely identified with opening and folding machines, and whom, we understand, were the original makers of these machines, which are in successful use in many American mills.

Rusden Machine Co. Open New York Office.

The Rusden Machine Co., Warren, R. I., announce that they have opened their New York City office, which is in charge of Mr. A. C. Freeman, who has had a long experience in bleaching, dyeing and finishing machinery.

The business of this company has extended so rapidly that this departure was found necessary to enable them to handle the work and give their many customers, who are easily reached from New York, the advantage of calling in expert advice quickly.

Mr. Freeman can be found at 39 Courtland Street, where detail drawings of the full line of bleaching, dyeing and finishing machinery may be seen.

Big Catches in Maine and New Hampshire.

Judging from the reports which are daily reaching us, the fishing sport this season gives promise of surpassing that of previous years, both in size and quantity. At Belgrade Lakes, Maine, some large catches have been made and also at Moosehead; while the lakes of New Hampshire are this year outdoing themselves both in size and quantity.

The ice left Sunapee April 10th, and for the last two weeks land-locked salmon, weighing anywhere from four to ten pounds, have been landed. Numbers are daily leaving Sunapee with large catches of perch, pickerel, etc., and at Newfound Lake the catches have topped everything. A fourteen pound salmon was pulled from the lake on April 18th, and in every case the fisherman who has visited this section has been amply repaid.

Lake Winnipesaukee in New Hampshire is also sending out her quota, and in the numerous brooks and streams trout fishing has just commenced to take on life.

For full information in regard to fishing in New England, send two cent stamp to the General Passenger Department, Boston & Maine Railroad, Boston, for their illustrated book "Fishing and Hunting."

Excursion tickets to all principal down east fishing centres went on sale May 1st.

—Spaulding Perkins Co., North Rochester, N. H., have been busily engaged in perfecting a complete line of fibre specialties for textile mills, such as roving cans, boxes, trucks, etc., and we understand that they now have finished cans ready for shipment.

Extension of Mayo Works.

The Mayo Knitting Machine & Needle Co., are adding to their works at Franklin Falls, N. H., two large wings which will double their present capacity and enable them to meet the demands of their growing business. The Acme knitter which they build has been one of the leading fully automatic seamless hosiery machines for some time and its popularity among all the leading hosiery manufacturers is increasing yearly as its merits are being fully demonstrated by continued factory use.

This company also makes latch needles of extra good quality, and this part of their business has grown to such an extent that it requires a larger equipment to take care of it.

Learn and Earn.

That textile workers appreciate the value of an accurate knowledge of the finer points of textile manufacturing is shown by the widespread interest which we understand is manifested in the textile course announced some time ago by the American School of Correspondence, Boston, Mass. We are told that men in all departments of the industry are taking advantage of this opportunity to improve their knowledge of textiles. The course was prepared by textile experts and, as instruction is given by mail, students are enabled to secure an education in the various branches of the textile industry without interrupting their work and at very slight expense. In fact, the school offers a few scholarships in which the only expense is the actual cost of instruction papers and postage. The location of the American School in an educational centre like Boston, a city so prominently identified with textile interests, enables the school to engage exceptionally qualified instructors to supervise the work of its students.

Many of the instructors are regular teachers in the resident schools for which Boston is famous. In addition to textiles, instruction is given in mechanical, electrical and steam engineering, heating, ventilation and plumbing, including mechanical drawing. Full particulars will be found in the handbook, a copy of which will be sent on request.

American Agent for J. & T. Boyd.

James Speed, 170 Summer Street, Boston, Mass., has been appointed agent for Messrs. J. & T. Boyd, Glasgow, Scotland. Mr. Speed will be sole representative in the United States of this well known firm of machine builders. He is a thoroughly practical worsted yarn maker, having been with some of the best firms in Bradford, England, and more recently superintendent of the yarn department of the Arlington Mills, Lawrence, Mass. He is, therefore, well posted in all that relates to the manufacture of worsted yarn.

J. & T. Boyd build spinning, winding and twisting machines, and their machinery is found in many of our best mills. In the department devoted to new machinery and processes in the April issue, we called attention to a new worsted spinning frame that has recently been put on the market by this firm, and which is claimed to possess many advantages. A special feature is an improved tension band by which the tension on the spindles does not vary over 10 per cent.

Card Brushes.

Among their other specialties for textile manufacturers, S. A. Felton & Son Co., Manchester, N. H., make brushes for revolving flat cards, adapted for any make of machine. They are among the few brush manufacturers who especially study the requirements of the textile mills, and make their goods accordingly.

Cannot Supply Knitters.

The Arlington Machine Works inform us that they are so busy in their general line of machinery for bleachers, dyers and finishers of cotton, woolen and worsted woven fabrics, that they will be unable to give their attention to inquirers for machinery for dyeing and finishing knitted fabrics. They have had so many of these inquiries from knitting people that they take this means of notifying them of their thanks for their kindness in writing, and of their regret at being unable to serve them.

Silica Graphite Paint.

The ability of the American engineer to design steel structures of great strength and pleasing architectural effect, is shown in the eight half-tones on the handsome souvenir mailing card issued by the Joseph Dixon Crucible Company, of Jersey City, N. J. The card is a piece of artistic advertising on the part of the company, and will prove of decided interest to constructing engineers and architects, to whom it will be sent on request.

Dixon's Silica-Graphite Paint, which protects these structures from corrosion, has been very extensively used in the south, west and sea-coast sections of the United States, also in Mexico, Australia, China, Japan, West Indies and Philippine Islands, and has proven its protective and wearing qualities in all climates.

Purchase of Tools.

Mr. Arthur Birch, of the Arlington Machine Works, Arlington Heights, Mass., makers of modern machinery for bleacheries, etc., attended the recent sale of the plant of the Atherton Machine Company, and purchased for the further equipment of the Arlington Machine Works some of the tools which were offered for sale. He had as his competitors some of the best tool makers in the country, who were desirous of securing the tools bought by Mr. Birch. The Arlington Machine Works is very busy and requires these tools to help keep up with their orders.

Sale of the Holliston Mills.

The Dawson Mfg. Co., Holden, Mass., have purchased the Holliston Mills, Holliston, Mass., which have been idle for a number of years. They will be put in operation at once. The sale was made by R. B. Denny, 143 Federal St., Boston, Mass.

Humidifiers.

The American Moistening Co., Boston, Mass., report the following orders received by them for their system of air moistening: The Standard Cotton Mills, Cedartown, Ga., a repeat order; the New York Mills, Oneida Co., N. Y., repeat order; the Springstein Cotton Mills of Chester, S. C., new order; the Stafford Worsted Company, Stafford Springs, Conn., new order; the Exeter Manufacturing Co., Exeter, N. H., new order; the Royall Cotton Mills, Wake Forest, N. C., repeat order; Messrs. F. W. Bird & Son, East Walpole, Mass., repeat order; the Myhnepo Ribbon Mills, College Point, Long Island, N. Y., new order; the American Tobacco Company, New York, repeat order; the Yazoo Cotton Mills, Yazoo, Miss., new order; the Meridian Cotton Mills, Meridian, Miss., new order; the Riverside Cotton Mills, Anderson, S. C., new order.

Cling-Surface.

The following letter is one of many like it received by the Cling-Surface Mfg. Co.:—

Cherry Valley, Mass.

Cling-Surface Mfg. Co. (New England Branch, Chas. F. Chase, Mgr.), Boston, Mass.

Dear Sir: Your favor to hand and in reply will say that we have been using your Cling-Surface for about a year and are much pleased and satisfied with its results. If applied right (you know that we had trouble at first in not knowing how to use it), belts will be in fine condition and give much greater efficiency in power wherever used.

We are as much pleased with its working in our card-room as in our engine room, and the picture of the latter shows what it is doing for us there.

Very truly yours,
Channing Smith.

An Interesting Venture.

Modern railroading has indeed made marvelous progress in the past few years but the latest and most noteworthy achievement is the new arrangement which goes into effect on May 18th, whereby the New Jersey Central and Philadelphia and Reading Ry. will have a train between New York and Philadelphia every hour in the day from 7 A. M. to 6 P. M. inclusive, daily except Sunday.

Trains will leave either city on the even hour and run direct to Reading Terminal and this service will be in addition to the Royal Blue service. New equipment, both coaches and locomotives, will be used and with new Parlor Cars attached to every train no better service will be in operation on any railroad.

The road-bed for the whole distance between New York and Philadelphia has been greatly improved. New and heavier rails having been put in place and quantities of trap-rock ballast are also being used.

Every train is a quick one, and several will make two hours running time between the two cities. An important feature easily remembered is a train every hour on the even hour between New York and Philadelphia.

Kensington Machine Works.

The Kensington Machine Works is the name of a new machine shop recently started by Wm. M. Young, who has associated with him George Weinmann, located at Mascher St., below Lehigh Ave. They will build a new patent rope machine, and do all kinds of repairing and jobbing, and furnish duplicate parts of textile machinery, as well as gear cutting, pattern making, etc.

Mr. Young is well known to the trade through his long established business as a manufacturer of spindle tapes, mule bands, hook bands, hooks, etc. This latter business will be carried on as usual at the old location, 2421 Mascher St., Philadelphia, under his son's management.

The Buffalo Forge Co.

The Northwest Steamship Company have been making rapid progress on the interior changes of their crack passenger boats "Northwest" and "Northland." These changes, although the steamers have only been in commission four years, include new boilers of the Scotch marine type, also many changes of the interior fittings. The estimated cost will reach nearly half a million dollars. Contracts for the most of this work have been awarded.

On each boat there will be duplicate generating sets for electric lighting, consisting of two horizontal tandem compound engines made by The Buffalo Forge Company, direct connected with General Electric Company marine type 75 K. W. generators. The engines are of the Buffalo Forge Company's latest type, and especially designed for this contract, the space available being limited. As the boats are to be put in commission at the near approach of lake navigation, the builders have agreed to deliver the engines in an extremely short time.

In addition to the above, these boats are being fitted out with a complete set of the most improved ventilating apparatus for maintaining the air in all portions of the vessel uniformly cool and pure at all times. Six Buffalo steel plate fans with direct connected General Electric Company motors will be installed in each steamer with an elaborate network of galvanized iron ducts for delivering the air. This system will be, when completed, in perfect accord with the balance of the magnificent equipments of these splendid vessels.

—Jos. Chadwick & Sons, Newburgh, N. Y., recently placed their order with the New York office of the American Blower Co., Detroit, for a drying outfit to be used in connection with their tentering machines. The latter company are ex-

perts in the solution of problems relating to drying, and have recently shipped one of their hot blast heaters to the Mishawaka (Ind.) Woolen Mfg. Co. This makes the eighth such apparatus in use by this company.

The Philadelphia Textile School.

The superintendent of the Philadelphia Textile School, Mr. Edwin W. France, some months ago spent considerable time in Europe, and during that period was the welcome guest of several of the foreign textile educational institutions. Following that visit, and to some slight extent a result of it, Mr. Abraham Peel, of the Bradford Municipal Technical College, of Bradford, England, is now on his way to this country, and will shortly visit Mr. France at the Philadelphia institution, Broad and Pine streets.

Mr. Peel is a prominent resident of Bradford, and deputy chairman of the Technical Instruction Committee. In common with every one interested in the developments made in technical educational institutions, the practical and rapid strides made by the Philadelphia school has attracted his attention, and for that reason the visit of Mr. Peel to this country is of more than general interest in textile school circles.

The school in the Quaker City was the pioneer in the introduction of actual and practical education on the machines of every department that enters into the equipment of a textile mill of every and any description. It was here the theory of manufacture was made secondary rather than the primary object of tuition. From this line the school has never diverged, hence the interest of Mr. Peel in the Philadelphia institution, an interest made live by the modest accounts given by Mr. France concerning the school of which he is superintendent.

It was but a comparatively short time ago that Mr. W. E. B. Priestly, chairman of the Instruction Committee of the Bradford Institution, at the latter's last commencement, also visited the Philadelphia institution. In an address before his committee, upon his return home, he did not hesitate to call the attention of his fellow-members to the fact that the American school was eminently practical, and that since the introduction of practical tuition the character of the textile products of the United States had distinctly improved in design, finish, and originality.

Mr. Peel's visit is following very closely that of Mr. J. Crowther, principal of the Municipal Technical School, of Halifax, England.

Another distinguished visitor to the school recently was F. William Kuhn, of Stuttgart, Germany. The latter is an accredited commissioner from Wurtemburg, Germany, representing the department of education.

Customs Decisions.

The general appraisers have decided that jute thread waste in the gray, which is imported to be used as paper stock, but is identical in character with waste that is fit for use in other industries than paper making and is so used to a large extent, is not free of duty as waste "fit only to be converted into paper," but is properly subject to classification as "waste, not specially provided for," at the rate of 10 per cent ad valorem. Where fitness exclusively for a certain use is the qualification prescribed for determining the classification of an article, the common or predominant use of the article cannot properly be taken as the test. Where the use of an article determines its classification, new uses to which the article becomes adapted in the progress of manufacture and in the development of new industries may operate to change a classification which has previously prevailed.

In another case the board decided that woven fabrics wholly of silk wherein 25 per cent. only of the gum has been boiled off, leaving remaining 75 per cent. of the gum, constituting 18.4 per cent. in weight of the fabric as weighed before any boiling off was had, are not "boiled off," but "in the gum" as that term is used in the tariff act, and dutiable at the rates therein prescribed according as they fall within the other provisions of that provision.

The Scouring of Wool.

One of the most important processes to which wool is subjected in manufacture is the scouring, and this should receive the closest attention of the manufacturer.

In scouring there are two distinct objects to accomplish: 1st, removing the suint or wool perspiration; 2nd, removing the wool grease and the dirt adhering thereto. The suint and loose dirt are easily removed, but in removing the wool grease great care should be taken, as this is combined with fatty acids, and is very difficult to saponify, but readily forms emulsions with proper ingredients, and these should be used in the mildest form to remove the grease without injury to the wool, otherwise the fibre will be left not only tender, but straight, dry and lusterless. In this case the wool is injured 20 to 30 per cent., which is wholly unnecessary if the proper precautions are taken, and a little judgment is used in regard to the physical condition of the wool.

In examining wool for scouring, note its condition as to oil and dirt, and regulate the scouring ingredients accordingly. The use of a compound made properly and used with discretion is one of the quickest and most economical methods of scouring.

The firm of E. M. Thayer & Co., 112 Broad St., Boston, Mass., are manufacturers of such a product, and would be pleased to give information to any one interested. This product is also suitable for scouring pieces, and will be found both efficient and economical, as it is made upon purely scientific principles, and contains nothing that can injure the fibre.

—The Massachusetts Fan Co. has removed its factory and principal office from Boston to Bedford street, Riverview Station, Waltham. The new factory is in a convenient suburb of the New England metropolis. The city office remains at 53 State street, Boston.

—The Auburn Woolen Co. have contracted for a Green Economizer.

Practical Education.

The most important thing about the present period of the world's history is that this is a time of breaking away from old standards, old ideals, old forms and the setting up of new ones in their places.

Educational methods were among the first to feel the effects of this new force, and the people demand that their children shall be taught knowledge of real use to them; that the science of the school laboratory shall be the same as that of the workshop, and that the pupil's question, "What is the use of this?" shall be answered plainly.

In this connection it may interest the readers of this magazine to learn some details of a course of study recently established in the English High School of Boston, under the direction of Mr. Frank O. Carpenter, one of the masters of the school.

It is intended that the student, on finishing the course, shall have a clear idea of how all the chief productions of the earth, agricultural or manufactured, are raised or made, how and where they are carried from the place they are produced, to the consumer who needs them. It is also the intention of the school that this information, so far as it is given, shall be exactly that which the boy going to work on the farm, in the store or in the factory, would learn from his employer and would actually have to know to succeed in his business.

For instance: Cotton is treated as follows:

First. The cotton is shown in the stalk and pod; photos or lantern slides show the cotton fields and the negroes picking it. Second. The process of ginning the cotton is described and views shown, also the method of baling. Views of river steamers and wharves, etc., show the cotton as it appears on its way to the factory. Third. The processes by which the raw cotton is turned into thread, by carding, drawing, spinning, etc., are explained and views of the mills and machinery shown. The pupil has before him the sliver, roving, yarns on bobbin, cop or spool. Fifth. The process of mercerizing is described, and samples of yarn before and after mercerizing are shown. Sixth. By blackboard drawings and use of real warp and shuttle the process of weaving cloth is explained, and samples of cotton fabrics are shown in many varieties of form, texture, color, etc. Seventh. Other cotton products like cotton rope, surgical cotton, etc., are discussed. Eighth. The production and manufacture of cotton throughout the world is studied, the amount of exports, raw and manufactured, and the final use and consumption shown by views and lantern.

The method followed with cotton is used also with wool, flax, silk and the fibres of hemp, sisal, manila hemp, jute, etc.

The instructor, Mr. Carpenter, is also collecting, as fast as possible, specimens for a commercial museum to be connected with the school, primarily for the use of the classes, but also for the whole school and the public, who may be interested to study the collection.

As the collections are, of course, at present incomplete, gifts of all kinds of textile or other commercial products in raw, intermediate and manufactured stages, chemical or other products used in their manufacture would be of immense service to the work. Any specimens presented will be properly credited to the donor and preserved with care in the form best suited for their exhibition and use.

Gifts of specimens to the school museum should be addressed to Frank O. Carpenter, English High School, Boston, Mass., and marked "For the Commercial Museum." A letter should also be sent to Mr. Carpenter, notifying him that the packages have been sent that he may see that they are promptly delivered and acknowledged.

Gifts of trade lists and trade pamphlets dealing with different commercial products are also desired. These are of great value, as they give the actual information used by the trade.

The Scaife Water Purifying System.

We desire to call attention to the following contracts recently taken by Wm. B. Scaife & Sons Co., Pittsburg, Pa., for the installation of their method of treating boiler feed water:

American Sheet Steel Company for New Philadelphia, O., plant, 1500 h. p.; A. A. Simonds & Son, Dayton, O., 200 h. p.; Harrisburg Rolling Mill Co., Harrisburg, Pa., 1500 h. p.; Antrim Iron Company, Mancelonia, Mich., 1500 h. p.; National Mining Company, Pittsburg, Pa., 1000 h. p.; Isaac Harter Company, Fostoria, O., 1000 h. p.

This method of treating boiler feed water is claimed to be the most scientifically correct of any now on the market. It requires very little floor space and is said to be the cheapest system as regards maintenance and operation. These plants are furnished for any desired horse power.

—Last fall the Lestershire Mfg. Co., installed in their new factory at Endicott, N. Y., the "A. B. C." fan system of heating. They recently wrote the manufacturers (American Blower Co., Detroit), as follows: "It gives us very great pleasure to write you that the heating apparatus which you installed in our Endicott factory is giving us excellent results and we are well pleased with the same. There has been no time but what we have had plenty of warm air and this by running our fan slowly, while at no time have we been compelled to operate this engine to its full capacity in order to get results."

A New Aniline Black.

A novel method of dyeing aniline black has been patented in Germany. A solution is made of 12 lb. of aniline oil, 12 lb. of m-nitraniline, 32 lbs. of concentrated hydrochloric acid, 5 lbs. sal ammoniac, 12 lbs. of chlorate of soda, and 4 lbs. of nitrate of copper, in 200 gal. of water.

The yarn, previously scoured and dried, is soaked in this solution, and dried at 30 deg. C. It is then oxidized in air at 40 deg. C., kept damp by steam for 12 hours. The yarn is now of a dark green, and is passed, at a temperature of 50 deg. C., into a solution of 5 per cent. of the weight of the yarn of potassium bichromate, where it stays for 24 hours. The yarn is then rinsed and dried.

It is asserted that this black will not turn green in wear, that it is completely fast to washing, and that it is hardly changed by a warm 10 per cent. solution either of bisulphite or of sulphuric acid. —Dyer and Calico Printer.

The New Mail Textile School.

As announced in a recent issue of The Textile World, the American Correspondence School of Textiles of New Bedford, Mass., C. P. Brooks, Director, has become one of the many schools whose work is carried on under the general title of the International Correspondence Schools, Scranton, Pa. As this change is of importance to every textile mill man or manufacturer that realizes the economic value of technical training, we are glad to present herewith a brief statement of the origin and rise of the Scranton schools.

The institution developed from a correspondence school of mines, founded in

1891 by Mr. T. J. Foster, President of the International Schools. As is well known, miners are required to pass examinations for license before they can act as mine foremen or superintendents, and the idea occurred to Mr. Foster that miners could be provided with the information necessary to pass these examinations, entirely by mail, if the instructions sent them were systematic and simple, and the correction of their work was fully and carefully attended to. His plan proved to be a practical one, but neither Mr. Foster nor anyone else had any conception of the wonderful system of training by mail that would be evolved from this little idea.

The success of the correspondence school of mines was immediate. Over a thousand men accepted this opportunity for self-advancement, within the first year of its existence. A demand sprang up for other courses and they were prepared. This demand has continued to grow and is growing. New courses have been added every year, and scarcely a month goes by but the International Correspondence Schools announces that its now famous system has been applied to the technics of some new trade or profession. Over 400,000 men, and women, too, have enrolled in the Schools during the last ten years, and it is said that this number is increasing at the rate of 10,000 enrollments per month.

These figures may appear exaggerated, but when we consider that the institution has enrollment offices in every city of any size in the United States and Canada, that it has a force of representatives numbering over 1500, and that it is one of the largest advertisers in the world, their probability becomes apparent. Then again the institution takes particular pains to see that every student is so well satisfied with his connection with the Schools and the results of his training, that he becomes a sort of solicitor for them. With such a force behind it, it is small wonder that the enrollment is increasing at the present rate.

Some idea of the extent of the work carried on may be gained from the statement that the main building that we have illustrated is only one of some eighteen or twenty that the schools occupy in Scranton, where they have over a thousand employees, nearly 400 of whom are engaged entirely in instructing the students and correcting their work, and in writing and revising the text-books that have made this institution so popular.

The position of the International Correspondence Schools in the educational field is unique. It provides special courses of training by mail for special positions or classes of work. For instance, if a man is working as a telephone wireman, and desires to qualify himself for advancement in his line of work, it is not necessary for him to stop work and go to a technical school to study electrical engineering. He can keep right on with his work and take a course of training by mail from the International Schools, not in electrical engineering, but in telephone engineering.

This illustration points out two strong reasons for the success of the schools: First, that the training by mail is conducted entirely in spare time and does not interfere with the student's regular occupation; and second, that the student is taught only such facts, processes, and principles as are necessary for his success in some particular occupation or position.

This same rule applies to the training for positions in textile manufacture and design. For instance, the schools offer a complete course in the manufacture and design of cotton fabrics, but the cotton mill man that wishes to become a boss carder need not take this complete course. There is a shorter and cheaper course that will give him all the technical training required for the position of boss carder, but no more or no less.

Again, if a boss weaver desires to qualify as a designer of fabrics, he can obtain a course of training by mail in the technical principles of design. He can even choose between woolen and cotton designing.

This system of specialization is carried

out by the schools in all of the hundred or more courses offered, and it is an indication of the general trend of the times. The institution does not claim, or attempt, to give its students broad educational culture, but confines its attention strictly to qualifying him technically for the position he desires to obtain. It even has a department in effective operation that assists students in securing the promotions or new positions for which they are preparing. It makes no attempt to qualify a man practically for any class of work. The courses are not intended to make weavers out of dry goods clerks or plumbers out of coachmen, but is intended to qualify those already at work, for advancement and better pay in their chosen trade or profession.

Its success has been founded on the success of its students, and their success has been due to the excellence of the text-books or instruction papers, sent them for their home study without a teacher, the careful and conscientious correction of their work, and the assistance given them in overcoming the difficulties that are almost certain to arise in the path of the ambitious worker that has had few educational advantages.

Trained workers means better methods, better machines and better goods. It means the one essential that needs to be added to our commercial opportunities to give us the leading place in the world's textile manufacturing countries. The International Correspondence Schools will readily forward a full description of their course in textile manufacture and design, and a clearer statement of their system than we could give in these columns.

Lustering Woolen Goods.

There is a great difference in lustre between the different kinds of natural wools; for instance, fine Silesian and Saxony wools and wools from Sydney and Port Phillip have a better lustre, and hence are more suitable for lustre goods than South American and other wools, especially wether wools. However much this wool is carded, shorn, brushed, hot pressed, etc., the hairs will stick up again sooner or later and spoil the effect of the finishing. The only remedy is thoroughly soaking in water, leaving the wet goods folded up for a long time, and finally carefully brushing, drying, and hot pressing.

The following is, on the whole, the best method of lustring. The goods, first well brushed while wet, are treated on a hollow perforated roller alternately with steam and hot and cold water, these being admitted to the inside of the roller and passing out through the fabric; the goods being well covered during the process. The steaming lasts from four to five minutes after the steam begins to appear outside, and the lustre is then fixed by forcing cold water into the rollers until it appears on the outside of the covering. The steam should not be at a greater pressure than from 15 to 22 lbs. The roller slowly rotates during the whole of the operation.

The pieces are then brushed, and either beamed on to rollers or left folded up for from twenty-four to thirty-six hours before being dried. In the latter case they are reversed the while several times. With regard to the subsequent drying, it must be noted that the harder the stuff is to lustre the more quickly it must be dried.

The final pressing is preceded by shearing, but the usual brushing with steam is best omitted, as it partly removes the lustre. The pressing is done by hydraulic presses to get the pressure necessary for an intense and durable lustre. The pieces must go into the presses neither too dry nor yet while still warm, if the lustre is to be satisfactory. The press plates must be well heated.

The pressed pieces are then rolled as lightly as possible on the hollow rollers, and steamed at a pressure of from 20 to 28 lbs. for from one to two hours. The goods must not be removed from the rollers till quite cold, and are then rinsed for at least an hour with clean water to restore the soft handle. The goods are next left folded wet for a day or two and then dried, and are finally treated to a cold pressing.—Textile Manufacturer.

The Philadelphia Textile School.

The formation of an Association of the Alumni of the Philadelphia Textile School has long been considered advisable, having been urged by many of the former students during their periodical visits to the school. In order to further the idea, about a dozen of the students of former days met on January 27, 1902, and formed a temporary organization. The fact was apparent that the burden of the work of organization must fall on those who are located in or near Philadelphia, and committees were appointed to report at meetings which were held on February 12th and 26th. These meetings were well attended, and at the latter the organization assumed permanent form, a constitution was adopted and officers elected to serve until the regular annual meeting in June.

The annual meeting is the only one especially provided for in the constitution, and is to occur on the morning of the day following the school's annual commencement.

The plan as outlined by the committee provides for two days as follows:—Thursday, June 5th: Morning—Informal reception and reunion at the school. Afternoon—Visiting various industrial establishments as arranged by the committee. Evening—Commencement exercises. Friday, June 6th: 9 a. m.—Business meeting at the school; Presentation and discussion of papers on technical topics by members; Address by a speaker of national fame on a subject of general textile interest. 3 p. m.—Short excursion on the river or in the park. 7 p. m.—Banquet.

The managers of the school urge all graduates who can possibly do so to attend this meeting, and avail themselves of the opportunity it will afford to renew old and make new acquaintances, and to meet graduates who since leaving school have taken a post-graduate course in the school of practical textile work.

An attendance of six months at the school makes a student eligible for membership in this alumni association.

IN AND OUT OF THE MILL

Joseph Marie Jacquard.

In 1752, in a smoky suburb of Lyons, was born Joseph Marie Jacquard, inventor of the loom which bears his name. He came of healthier, sturdier stock than did the average "canuts," as the poor weavers were called, for his grandfather and those before him had been farmers on the banks of the Saone. His father had left the small family domain to remove to Lyons to take up the business of silk weaving. He did not improve his fortunes, and died young, leaving nothing of the original farm lands to his son Joseph Marie, except two looms.

Let us enter the suburbs of Lyons and view the silk weavers as they lived in the time of the younger Jacquard, and, indeed, continued to live up to sixty or seventy years ago. We shall then better understand the strength of Jacquard's incentive to invent some means to better the conditions of silk manufacture, and ameliorate the sufferings of the weavers.

The pictures which historians have drawn of these abodes of the silk weavers are not attractive. Everywhere are the signs of poverty, overwork and discouragement—an air of chronic, subdued melancholy. The roofs are blackened by smoke and by the vapors and fumes from the dye works. A constant mist, an unhealthy miasma, hangs about the abodes of the workmen, which even the breezes from the Rhone and the Saone fail to carry away. The streets are narrow, winding and tortuous, bounded on either side by houses from four to six stories high; the walls, like the roofs, are blackened and green-stained.

The numerous small windows of these houses are without sills or balconies, and the greater number are destitute of glass. Sheets of oiled paper are substituted, being pasted in the window frames to shut out the glare of the daylight lest it fade the colors of the stuffs. As if this were not in itself dismal enough, the paper is yellowed by the elements, and often torn and detached from its original fastenings and hangs flopping dismally in the breeze. Each of these abodes is constructed with one common entrance for its 200 or more inhabitants. This staircase is at the end of an alleyway, bordered on either side by an open drain leading to the street sewer. This alleyway is muddy and offensive. Dampness, mold and decay are everywhere.

Enter one of the buildings. The rooms are bare of comfortable furniture, the main object being ever the same—the loom, the life and the death of the weavers. The weaver crouches before his web, while the other members of the family assist him. They are all unhealthy, dull and listless in appearance, the children of circumstances, stunted in size, with sunken chests, high shoulders, swollen knees, hollow, pallid cheeks, and eyes, expressionless save for a look of settled patience. One sees no vigorous men, no attractive, wholesome women. So narrow is the life of these toilers, that even their language is peculiarly their own, a patois only half intelligible to the outside world.

Sunday brings a little brightness into their lives. Then the weaver changes his linen; his wife and daughters deck themselves in their best and go forth to the churches. The evening may be spent in the parks or by unfrequented roads in the outskirts of Lyons. The tea gardens, visited almost exclusively by weavers, are well filled on Sunday mornings. The young men and women dance, and forget for a time the comfortless surroundings to which they must return, and the drudgery they must take up again on the morrow.

Occasionally out of this mass of phlegmatic humanity there issues one with more ambition and greater physical force. Such scrape together, by the most rigid economy, money to buy looms of their own. They in turn become small manufacturers, grinding down their apprentices and work-people as they were ground down in their youth. These successful ones move away from the squalid surroundings we have pictured, into the city of Lyons proper, throwing off the brown vest of the workman, and wearing the long skirted coat of the merchant.

Such, then, was the condition of the silk weavers in the time of Jacquard. We have said that his inheritance was a couple of looms, so we may picture him as fortunate among his fellows, in having this start in life. Superior education he had not, but Nature had bestowed upon him mechanical genius. In writing of Jacquard, Lamartine says:—

"Ordinarily the mechanic can do nothing without geometry and mathematics; these sciences are the figures by which he calculates, and the terms by which he expresses his thoughts. But sciences, which are the necessary tools of vulgar minds, are the servants of genius. When genius finds them not ready at hand, it passes them over, or invents others for its own use. A vigorous and patient imagination, the gift of nature, is the only source of all the great inventions which have exercised such material influence over the entire world. The most valuable machines have been invented by the laboring artisan, the shepherd, the dreaming monk, the potter, the wool carder, the sailor, the weaver and the blacksmith, and not by the learned philosophers. The workshop has given birth to more masterpieces in practical art than the academy. Chance and imagination are the parents of invention, science is but its nurse."

Jacquard knew little or nothing of books, but he possessed mechanical genius to an extraordinary degree. It was said of him, a little spitefully, perhaps, by others who accomplished less, that he was a mere machine who invented other machines.

From morning till night he thought and planned ways of simplifying and perfecting the tools of his own and other trades. He was obliged at the same time to work diligently for the maintenance of his family, for he had early taken to himself a wife, the daughter of a gunsmith of Lyons.

The gunsmith had been a friend of

Jacquard's father, and the two young people became attached to each other when very young. Their future looked bright, for the gunsmith had promised his daughter a marriage dot, which with Jacquard's little inheritance would give them a good beginning. This promise he was unable to fulfil, however, owing to reverses in his modest means. But Jacquard and his sweetheart wedded just the same, for theirs was a romance of real love, where dollars and cents did not count. We are told that she was amiable and sweet of disposition, sympathizing with her husband in his work, and that his domestic life was very happy.

"The operators in the woolen mills must be awful lazy."

"Why do you think so?"

"This paper says they use self-feeders."

A New Yarn.

Bizzer—I see where Wull and Kotten are manufacturing boxing gloves now.

Buzzer—O, that's nothing new, they've always been in the "mill" supply business.

Squeezers.

She—And you are not going to spend the evening with me?

He—I'm very sorry, dearest, but I have a pressing engagement and—

She—Then take back your ring. I'm not going to be engaged to a man who isn't willing to do all his pressing here.

Mrs. Stouty—I heard her remark that I lacked poise.

Mrs. Pouty—Absurd!

Mrs. Stouty—Wasn't it?

Mrs. Pouty—Yes, but then probably she never heard of "avoirdupois."

Brilliants.

Beauty within itself should not be wasted:
Fair flowers that are not gathered in their prime
Rot and consume themselves in little time.
—Shakespeare.

What specter can the charnel send
So dreadful as an injured friend.
—Scott.

He is the freeman whom the truth makes free,
And all are slaves beside.
—Cowper.

Blankets as Shields.

The Yaqui Indians discovered that by holding wet blankets in front of them and clear of the ground, the bullets of the muskets used in the olden days, could not penetrate this protection. In a battle with the Mexicans, this knowledge enabled them to carry the day.

Appropriate.

Hank—Does your friend in the shoddy mill confine himself to any particular class of music in his playing?

Yank—O, yes; he plays nothing but "rag-time."

In Doubt.

"Where can I find something nice in oil for the dining room?" asked a stout woman of the floorwalker.

"On the third," he began, then paused and looked doubtfully at the inquirer.

"Did you want a painting or something in the sardine line?" he asked.

Doffers Not Wanted.

A North Carolina cotton mill treasurer was going through his spinning room as the boys were doffing some frames. Calling the overseer to one side he said: "Why are those frames not running?" "Why, the boys are doffing, sir." "Well, here, here, here, we don't want any more of this doffing business. Put those boys to work and keep the frames running, production is what we want."—Canadian Journal of Fabrics.

Doctor (to patient)—"How did you manage to fall down the stairs?"

Patient—"Oh, I was just starting to come down when my wife startled me by shouting out 'Hurry up!' and I always do the opposite, so I hurried down, and you see the result."

Ignorant.

As a Presbyterian preacher was traveling through Arkansas, he stopped at a house one day, and after conversing with the woman awhile, he said:

"Are there any Presbyterians here in your neighborhood?"

"Wall, I dunno," she said. "The old man and boys are out huntin' now, but if they hev killed any, I hain't heard 'em say anything about it. If they hev, you'll find their hides out thar on the fence."

Weaving and Printing in Java.

In his account of a trip through Java and Sumatra, in 1900 and 1901, Dr. Giesenhagen, Professor of Botany at the University of Muenchen, gives an interesting account of the household weaving and dyeing industry in those islands.

The great extent to which cloth is manufactured by hand in Java, in spite of the quantities of cheap clothing supplied

to the inhabtiants by Chinese merchants, proves that in former times the industry must have been of even larger proportions.

The work is done mostly by women. The loom is a very simple contrivance lying flat on the floor, the weaver sitting on the same level; the warp is wound on a board set in forks on either side of the loom, as shown in the illustration. These forks are set in blocks that can be moved by the legs of the weaver.

For bringing the warp under tension, a cross rod resting in the small of the weaver's back is fastened by loops to another rod passing in front of the weaver, and around which the cloth is passed. The shuttle consists of a piece of bamboo, one end of which is closed and pointed, the bobbin in which the yarn is wound being placed inside. Two smooth rods used alternately, form the shed, through which the shuttle is passed, and also serve for pressing the filling into place.

Decorating the cloth is effected by a peculiar dyeing process, producing the decorated texture called Sarong. A portion of the surface is covered with wax, and the cloth then immersed in the dye bath, which colors only that part of the material that has not been waxed. The cloth is then dried, the old wax removed and a new supply applied to such portions of the goods as are not to be dyed in the second bath. This process is repeated until the pattern is complete.

For fine line patterns, the wax is first placed in a cup made of bamboo about the size of one's finger; it is then gently heated and flows in a fine stream through a suitable opening in the form of a fine filament, which is guided over the surface of the cloth, as desired. Owing to the slow and laborious nature of this process of decorating, the genuine Sarong is very expensive.

In some places the decoration is applied by a stamp, which is dipped in melted wax and then placed on the goods. When the entire piece has been so treated, it is dyed; the portions free from wax are colored; the other parts protected by the wax, retaining their natural color.

It is very easy to distinguish the genuine Javanese Sarong from the cheap European calicoes that are sent to the East Indies by the shipload. The patterns that appeal strongest to the tastes of the Javanese are imitations of natural forms, vines with leaves and blossoms, between which are pictured butterflies and animals of grotesque forms. Geometrical figures are seldom employed. The colors are not loud, but always subdued in tone, and beautiful effects are produced by a skillful mixing and arrangement of colors.

Profitable Rag Weaving.

Through the chance that the loom of a manufacturer of old-time rag carpet was standing disused in the basement,

two bright women artists in New York, conceived the idea of starting the old machine on a second period of usefulness. Now they have become full-fledged manufacturers of artistic silk rag portieres, couch covers and rugs woven from rags of ingrain carpet.

These young women have made their products essentially the much sought for possessions of the rich, and so have made their adventure a financial success.

Doffers Wanted.

A New England mill president was walking through the mill one day with the superintendent and noticed some spinning frames stopped. "What's the matter with those frames over there?" "We are short of doffers this morning," was the answer. "Is that so?" said the president, and without further comment went to his office and after calling for a certain number on the 'phone said: "Is that the —— Supply Company?" "Yes," was the answer. "Well this is the —— Cotton Mill, I wish you would send us at once a dozen doffers, we're short of them."—Canadian Journal of Fabrics.

Easy to Please.

He—I suppose you wouldn't think of marrying a man unless he could afford to give you a yacht?

She—O, I don't know. If I really loved him I would be satisfied with a smack occasionally.

Hard Waste.

The president of a mill in a Southern town once had occasion to change superintendents. The man who held the job made much hard waste, and this was no doubt one reason for his having to leave. The new man soon noticed the trouble and proceeded to remedy it. After the new superintendent had charge a few weeks the president noticed that he was not selling his usual amount of hard waste so he decided that he would speak about the matter. "Look here, what's become of the hard waste I used to get?" "Why, we don't make any now, I've stopped it almost entirely." "What! I have a good trade in hard waste at about six cents a pound, in fact have a standing order for a bale every week, and I must have it. No, sir, don't you stop making hard waste, it's the best selling product I have." Of course the majority of mill presidents have a good understanding of the business and a great many are up-to-date practical men in all lines of manufacturing.—Canadian Journal of Fabrics.

The Inventor of the Wool Comb and Power Loom.

Cartwright, the originator of the power loom and wool comber, had an unfortunate experience with his mill enterprises and inventions. He failed to make any profit from loom or comber; a mill with 400 of his looms burned, and his patents were infringed. He wasted his private fortune and passed the later years of his life in many other fields of labor.

He voiced his bitterness and disappointment in the following striking words:

"A patent is a feeble protection against the rapacity, piracy and theft of too many of the manufacturing class. Were that eminent surgeon and anatomist, Carpue, who, it is said, has lately furnished some of his patients with supplemental noses, to discover a method of putting an additional pair of eyes into a man's head and to take out a patent for its discovery, I should not be surprised if forty witnesses were to come forward to swear that it was not a new invention, for they had seen forty people with forty extra pairs of eyes in their heads forty years ago."

Green Fleeced Sheep.

Sheep with green fleece are a novelty, but they are to be seen in Germany, near some copper works. They live in the dust and fumes, and drink water contaminated by copper.

Tread Lightly.

Bill—You seemed happy as you watched your wife's mother crochet.

Jack—Yes, I love to see my mother-in-law, knit.

Textile Patents.

Continued from page 871.

Self-Threading Loom-Shuttle. 697,005. Jonas Northrop, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a corporation of Maine.

Textile Roll Clearer. 697,212. Rufus S. Matteson, Providence, R. I.

Woven Tubular Fabric. 697,390. William Beck, Lawrence, Mass., assignor by mesne assignments to the Preston Hose and Tire Company, a corporation of Maine.

Woven Tubular Fabric. 697,391. William Beck, Lawrence, Mass., and James F. Preston, Boston, Mass., assignors to the Preston Hose and Tire Company, Everett, Mass., a corporation of Maine.

Warp Stop Motion for Looms. 697,253. Henry J. Jarry, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass., a corporation of Massachusetts.

Weft Replenishing Loom. 697,684. Harry W. Smith, North Grafton, Mass.

Weft Replenishing Mechanism for Looms. 696,657. Jeremiah M. Shay, Fall River, Mass., assignor of one-half to A. B. Pitkin Machinery Company, Providence, R. I., a corporation of Rhode Island.

Warp Stop Motion Detector. 698,123. Denis D. Mahoney, Hopkinton, Mass., assignor to the Draper Company, Hopedale, Mass., a corporation of Maine.

The Drag on Your Engine

You know the tightening strain on a belt is a dead drag which must be carried by belt and engine in addition to working load.

Just add up the total of this on your larger belts alone. It's tremendous.

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BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

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Gray, Arthur F., Exchange Bldg., Boston.
Green, Samuel M., Holyoke, Mass.
Suck, Adolph, 179 Summer St., Boston.

Attorney-at-Law.
Dawson, H. Horace, 309 Mutual Life Bldg., Philadelphia, Pa.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
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Baling Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

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Calculating Apparatus.
Pennsylvania-Eastern Syndicate, Bourse Building, Philadelphia, Pa.

Calico Printers' Machinery and Supplies.
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Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Edma Card Clothing Co, 422 S. 5th St, Camden, N. J.
Leigh, Evan A, 35 Mason Building, Boston

Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Smith, Jas. Woolen Machinery Co., Phila.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila, Pa.
Curtis & Marble Machine Co, Worcester, Ms.
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Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.

Castings.
American Ferrofix Co., 20 Broad St., N. Y.
Livermore, Homer F., 85 Pearl St., Boston

Chemicals and Apparatus.
Fiedt, Geo. D. & Co, 628 Arch St, Phila, Pa.
Roessler & Hassiacher Chemical Co, 100 William St, New York.

Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.

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Riggs & Brothers, 310 Market St. Philadelphia, Pa.

Cloth Boards.
Chaffee Bros , Oxford, Mass.

Cloth Strength Tester.
Burke & Hanford, 621 Broadway, New York.

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Combs (Wool and Cotton)
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.

Commission Merchants (Dry Goods, Knit Goods).
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Cotton.
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Charles, W. B., Amsterdam, N. Y.

Cotton Bale Ties.
DeHaven Mfg. Co., 50 Columbia Heights, Brooklyn, N. Y.

Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.

Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Ashworth, Elijah, Fall River, Mass.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Barber & Colman, 11 Pemberton Sq., Boston.
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Butterworth, H. W. & Sons Co., Philadelphia.
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Easton-Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
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Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Masher St., Philadelphia.
Lowe, Stephen C., 186 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G , Boston, Mass.
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Ring Frame Thread Protector Co., The Amsterdam, N. Y.
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Whitin Machinery Wks, Whitinsville, Mass.

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Blaisdell, Jr., Co., S., Chicopee, Mass.
Charles. W. B., Amsterdam, N. Y.

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Moeller & Littauer, 109 Greene St., New York.

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Goodwin, J. C., Diamond and Second Sts., Phila., Pa.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Dating and Time Stamps.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Dextrine.
Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
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Granger Foundry & Machine Co., Providence, R. I.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon. D. R. & Son., Raritan, N. J.
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Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co., 34 Oliver St., Boston, Mass.

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Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
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Firth & Foster Co., Kensington, Pa.
Greenwood, R. & Bault, Frankford, Pa.

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Howard & Co., Rahway, N. J.
Kagermann, Edward, 1210 Orianna St., Phila.
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Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pennypack Yarn Finishing Co., Holmesburg, Pa.
Pond Lily Co., New Haven, Ct.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa.
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U. S. Finishing Co., New York.
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Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
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Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
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Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)

Dye House Cans.
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Bailey, Frank, Cedar Brook, New Jersey.
Ford, J. B. Co., Wyandotte, Mich.
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Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
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Koechl, Victor, & Co, 122 Hudson St, N. Y.
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Molt Bros., Millbury, Mass. (Indigo Blue.)
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Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
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Thayer, Ed. M., 106 Broad St., Boston, Mass.
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Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
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Jeffrey Manufacturing Co., Columbus, O.
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Electrical Construction.
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Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

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General Electric Co., 44 Broad St., New York.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Employers Time Recorders.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Engineers, Mechanical.
Ferguson, John W, Paterson, N. J.

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Burt Manufacturing Co, Akron, Ohio.
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Steam Boiler Equipment Co., 20 West Houston St., New York.

Fulling Mills for Woolen Goods.
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Hunter Jas, Machine Co, No. Adams, Mass.
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Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
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Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

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Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger Mfg Co, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Weimar Bros, 1817 East York St, Phila. Pa.
Knit Goods Finishing Machines, Crochet, Etc.
Arnold Sewing Machine Co., 216 High St, Newark, N. J.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick Co., 606 Arch St, Phila, Pa.
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Willcox & Gibbs Sewing Mch. Co., New York.
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Stafford & Holt, Little Falls, N. Y.
Knitting Machinery.
Adams Top Cutting Machine Co., 11 Broadway, N. Y.
American Knitting Machine Co., 6th and Arch St., Philadelphia, Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Goodwin, J. C., Second and Diamond Sts., Phila., Pa. (Cutters.)
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
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Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mch. Works, Lakeport, N. H.
Ruth & Co., Norristown, Pa.
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Snyder, Homer P. Mfg. Co., Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.
Knitting Needles and Supplies.
Breedon, Wm. & Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co., Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.
Knotter for Spoolers.
Barber & Colman, 11 Pemberton Sq., Boston
Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph, Mich.
Laboratory Outfits.
Feidt, Geo. D. & Co, 528 Arch St. Phila, Pa.
Leather.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Leather Boards.
Rogers, H. E, South Manchester, Conn.
Lightning Apparatus.
Pennsylvania Eastern Syndicate, Bourse Building, Philadelphia, Pa.
Looms.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
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Machinery Dealers.
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Manhattan Machine Supply Co., 108 Grand St., New York.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia
Machinists' Tools.
Dodge Mfg Co., Mishawaka, Ind.
Leisenring Mfg. Co., Philadelphia, Pa.
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Mails.
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Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 54½ Hermon St, Worcester, Mass.
Fabric Measuring & Packaging Co., Postal Telegraph Bldg, New York.

Parks & Woolson Mach. Co., Springfield Vt.

Mechanical Draft.
American Blower Co., Detroit.
Buffalo Forge Co, Buffalo., N. Y.

Mechanical Engineers.
Buffalo Forge Co., Buffalo, N. Y.
Green, Samuel M., Holyoke, Mass.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sturtevant Co., B. F., Boston.
Suck, Adolph, 179 Summer St., Boston.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 12th St., Phila.
Rusden Machine Co., Warren, R. I.

Mill Architects.
See Architects & Mill Engineers.

Mill Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Mill Brushes.
See Brushes.

Mill Builders and Engineers.
Ferguson, John W. Paterson, N. J.

Mill Sewing Machines.
(See Sewing Machines and Supplies.)

Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Chase Pulley Co., Providence, R. I.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawaka, Ind.
Douglas, R. D., Fall River, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Hoag, A. W. & Co., Reading, Pa.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Lane, W. T. & Bro., Port Chester, N. Y.
Larrabee, John E., Amsterdam, N. Y.
Leisenring, John Mfg Co. Phila., Pa.
Main Belting Co, 1219 Carpenter St, Phila.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.
Shaw, Victor, Ring Traveller Co., Providence, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Steel-Heddle Mfg. Co., 1842 Germantown Ave. Phila.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sweet & Doyle, Cohoes, N. Y
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.

Moth Destroyer.
Ginseng Chemical Co., St. Louis, Mo.

Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.

Noils (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Office Specialties.
Niagara Clip Co., 122 Liberty St., New York.

Oil Cups.
New York Lubricating Oil Co., 35 Water St., New York.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.

Oils.
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
New York Lubricating Oil Co., 35 Water St., New York.
Oil Seeds Pressing Co., 15-25 Whitehall St., New York.

Oilless Bearings.
Arguto Oilless Bearing Co, Wayne Junction, Phila.

Overseaming Machines.
Arnold Sewing Machine Co., 216 High St., Newark, N. J.
Merrow Machine Co., Hartford, Conn.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.
Von Buchwald, W. J., 120 No. 7th St., Phila.
Willcox & Gibbs Sewing Machine Co., New York.

Oxidizing Machinery.
Hoag, A. W. & Co., Reading, Pa.

Packing.
Boston Belting Co, Boston.
Jenkins Bros., New York.

Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.

Paper Boxes.
Rosenberg, Henry, 107 Greene St., New York.

Paper Tubes.
Douglas, R. D., Fall River, Mass.

Patent Solicitors.
Crosby & Gregory, 34 School St, Boston.
Siggers, E. G., Washington, D. C.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.

Perforated Metals.
Beckley, A. J. & Co., 248 Pearl St., New York.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Southern Bobbin Co., Greensboro, N. C.

Pipe Covering.
Keasbey, R. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Portable Hoists.
Larrabee, John E., Amsterdam, N. Y.

Power Transmitting Machinery.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St, Philadelphia, Pa.
Hoag, A. W. & Co., Reading, Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co Fall River, Mass.
Rusden Machine Co., Warren, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.
Smith, T. H., Cotton Mill, Jamestown, N.Y.

Preparatory Machinery, (Cotton).
Atherton, A. T., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.

Press Boards and Fenders.
Rogers, H. E, South Manchester, Conn.

Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms
Hart, Charles, Frankford, Philadelphia.
Howard, Geo C., Lansdowne, Pa and 2123 Market St., Philadelphia, Pa.
Phillips Co. The Thomas, Providence, R. I.
Spencer & Rideout, Nashua, N. H.
(Power, Screw, Hydraulic, Hollow Steam Plate).

Printers (Fabrics and Yarn.)
American Yarn Printing Works, Philadelphia.

Pulleys.
See Power Transmitting Machinery.

Pumps.
Gould's Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Purifying & Filtration Plants.
Scaife, W. B. & Sons, Pittsburg, Pa.

Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa.

Raw Hide Gears.
New Process Raw Hide Co,. Syracuse, N. Y

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Leisenring, John Mfg. Co., Phila.
Loom Picker Co., Biddeford, Me.
Waider, J, Paterson, N. J.

Reeds and Harnesses.
Leisenring, John, Mfg. Co., Philadelphia,

Remnants.
Feingold, H. & D., 91 Bedford St., Boston.

Ribbons.
Barton, F. C., 54 Franklin St., New York.
Cheney Bros, S. Manchester, Ct.

Ring Travellers.
DeHaven Mfg. Co , 50 Columbia Heights, Brooklyn, N. Y.
National Ring Traveller Co., Providence, R. I.
Shaw, Victor, Ring Traveller Co., Providence, R. I.

Rope Transmission.
American Mfg. Co., New York.
Dodge Mfg. Co., Mishawaka, Ind.

Roving Cans.
Diamond State Fibre Co., Elsmere, Del
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.

Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.

Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I

Sample Cards and Mounting.
Rosenberg, Henry, 107 Greene St., N.Y.

Scales
Sweet & Doyle, Cohoes, N. Y.

Scallop Machines.
Merrow Machine Co., Hartford, Conn.

Schools.
American Correspondence School, Boston, Mass.
International Correspondence Schools, Scranton, Pa.
New Bedford Textile School, New Bedford, Mass.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.

Screens (Perforated.)
See under Perforated Metal.

Selling Agents.
See Commission Merchants.

Separators.
Draper Co., The, Hopedale, Mass.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.

Sewing Machines and Supplies.
Arnold Sewing Machine Co., 216 High St,. Newark, N. J.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Dinsmore Mfg. Co., Salem, Mass.
Fales, L. F., Walpole, Mass.
Kruse & Murphy Mfg. Co., 455 West 26th St., New York.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Rusden Machine Co., Warren, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Union Special Sewing Machine Co., 75 Kinzie St., Chicago, Ill.
Von Buchwald, W. J., 120 No. 7th St., Phila.
Willcox & Gibbs S. M. Co., New York.

Shafting Hangers, Etc.
See Power Transmission Machinery.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Shuttle Checks.
Victor Shuttle Check Co., Auburn, N. Y.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.

Silo.
Schlichter, E. F. 321 Vine St., Phila., Pa.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville. Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Rusden Machine Co., Warren, R. I.

Sizing, Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
O. K. Soap Co., 968 Franklin St., Phila.
Stein, Hirsch & Co, 165 Duane St, New York.

Slashers.
Cohoes Foundry & Machine Co, Cohoes, N. Y
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R. I.

Smoke Prevention.
Steam Boiler Equipment Co., 20 West Houston St , New York.

Soaps.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 968 Franklin St., Phila.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Vandergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Spooler Knotter.
Barber & Colman, 11 Pemberton Sq., Boston.

Sprinklers
International Sprinkler Co., Philadelphia, Pa.

Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall St., N. Y.
Wells, Wilfred, 505 W. Lehigh Ave., Phila.

Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co Hamilton, O.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia
Houghton, E. F. & Co., 3rd and Somerset Sts., Phila.
Jenkins Bros., New York.
New York Lubricating Oil Co., 35 Water St., New York.
Rusden Machine Co., Warren, R. I.
Steam Boiler Equipment Co., 20 West Houston st., New York.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sturtevant Co., B. F., Boston.

Steam Valves.
Jenkins Bros., New York.

Stop Motion for Looms.
See, Warp Stop Motions.

Tanks, Tubs and Vats.
Davis, G. M. & Son, Palatka, Fla.
Cypress Lumber Co, Apalachicola, Fla.
Hoag, A. W. & Co., Reading, Pa.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co., Warren, R. I.
Schlichter, E. F., 321 Vine St., Philadelphia. Pa.
Stearns, A. T, Lumber Co, Neponset, Mass.
Stevens, D. B. & Co., Auburn, Me.
Woolford, George, 2140 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Barton, F. C., 54 Franklin St., New York.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo. W Philadelphia Pa.
Friedberger Mfg. Co, Germantown, Pa.
Hamilton, J. H. & Co., 84 Franklin St., N. Y.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald st., Philadelphia.
Rueinstrom, R. A., 176 West York St., Philadelphia, Pa.
Weimar Bros, 1817 East York St, Phila, Pa.

Temples.
Draper Co., Hopedale, Mass.

Tension Pulleys.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
N. E. Ventilating & Heating Co, 980 Manton Ave, Providence, R. I.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.

Testing Machines.
Burke & Hanford, 621 Broadway, New York.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.

Textile Schools.
See Schools.

Thread Board for Spinning & Twisting Frames.
Houghton, L. T. Worcester, Mass.

Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.

Tickets and Labels.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Tower Clocks.
Howard E. Clock Co., 403 Washington St., Boston; 41 Maiden Lane, New York.

Turbine Governors.
Replogle Governor Works, Akron, O.

Turbines.
(See Water Wheels.)

Twine Machinery.
Brownell, G. L , Worcester, Mass.

Twisting Machinery.
Brownell, G L., Worcester, Mass.

Valves—Rubber.
Boston Belting Co., Boston, Mass.

Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Manhattan Machine Supply Co., 106 Grand St., New York.
Massachusetts Fan Co., Waltham, Mass.
New England Ventilating & Heating Co, Providence. R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Warp Stop Motions.
Draper Co., Hopedale, Mass.

Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W. & Sons Co., Philadel.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass
Kenyon, D. R., & Son, Raritan, N. J.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co , Warren, R. I.

Washing Soda.
Ford, J. B. Co., Wyandotte, Mich.

Watchman's Clocks.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co, 127 Duane St., New York.
Riggs & Brothers, 310 Market St., Philadelphia, Pa.

Water Purifiers & Filters.
Automatic Water Purifying Co., 45 Broadway, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Water Wheels.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Akron, O.

Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.

Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.

Winders. (Hosiery.)
Altemus, W. W. & Son, Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Universal Winding Co, 95 South Street, Boston.

Wood Pulleys.
Chase Pulley Co., Providence, R. I.
Dodge Mfg. Co., Mishawaka, Ind.
Hoag, A. W. & Co , Reading, Pa.
Saginaw Manufacturing Co, Saginaw, Mich.

Wool Cleaning Compound.
Ford, J. B. Co., Wyandotte, Mich.
India Alkali Works, Boston.

Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.

Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo, & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Woolen and Worsted Machinery.
Altemus, W. W, & Co, 2816 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F , Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., Lansdowne, Pa. and 2123 Market St., Philadelphia, Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.

Kensington Machine Works, Mascher St., below Lehigh Ave., Phila.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia, Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.

Wool Shoddies.

Becker, C. W., Agt., Amsterdam, N. Y.
Riverdale Woolen Co , Northbridge, Mass.
Slack, Wm. H. B., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.

Hunter, Jas. Machine Co., No. Adams, Mass.
Phillips Co, The Thomas, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Sargent's, C. G. Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARNS, THREADS, ETC.

Banding.

Moore, C. & Co. 12 S. 5th St, Phila, Pa.
Tucker & Cook Mfg. Co, Conway, Mass.
Toohey, M. J. & Co., Fall River, Mass.
Whittier Mills, Chattahoochee, Ga , Treasurer's Office, Springfield, Mass.

Cotton Yarns.

American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Ballou Yarn Co., Providence, R. I.
Barnesville, Mfg. Co., Barnesville Ga.
Buckingham & Paulson, 83 Leonard St. New York.
Catlin & Co. New York and Boston.
Charles, W. B., Amsterdam, N. Y.
Dana Warp Mills, Westbrook Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E. & Co, Boston and Phila. Pa.
Moeller & Littauer, 109 Greene St , New York.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A., 54 Franklin St., N. Y.
Orswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Mills, Chattaeoochee, Ga., Treas. Office, Springfield, Mass.

Cotton Yarns Wool Spun.

Broadbent, J. & Sons, Unionville, Conn.

Flax. Hemp. Jute and Ramie.

Fawcett, Hughes, 115 Franklin St., N. Y
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.

Ballou Yarn Co., Providence, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.

Glazed Yarns.

Ballou Yarn Co., Providence R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co. Frankford, Pa.
Orswell Mills, Fitchburg. Mass.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Harness Twine.

Ballou Yarn Co., Providence, R. I.
Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Hosiery and Knitting Yarns.

Boyer, B. F. Co., Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Herbst, Albert & Co., E. Allegheny Ave. Philadelphia.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic Mass.
Moeller & Littauer, 109 Greene St., New York.
Queensbury Mills, Worcester, Mass.
Skerry, A. T, & Co., 47 Leonard St., N. Y.

Mercerized Yarns.

Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Harper, E. J., 395 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co , Philadelphia.
Montgomery, J. R. & Co., Windsor Locks. Conn.
Morgan, E. A., 54 Franklin St., N. Y.
Pennypack Yarn Finishing Co., Holmesburg, Pa.

Mohair Yarns.

Cranston Worsted Mills. Bristol, R. I.
Montgomery & Co, J. R, Windsor Locks, Ct.
Morgan, E. A., 54 Franklin St., N. Y.
Whittier Mills, Chattahoochee, Ga., Treasurer's Office, Springfield, Mass.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co. 229 Chestnut St. Phila. Pa
Moeller & Littauer, 109 Greene St., New York.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.

Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Moeller & Littauer, 109 Greene St., New York.
Ryle Wm, & Co, 54 Howard St, N. Y

SAVOGRAN | CLEANS WOOL, FLOORS ANYTHING.
INDIA ALKALI WORKS, Boston.

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We are in want of an exceptionally good man, somewhat familiar with Jacquard work. It is essential that he be a good color designer. Good salary and permanent position for the right man. Address, Grazian, care Textile World, Boston, Mass.

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Will pay $3.00 or more per day for a good working foreman for a small repair shop in a large New York cotton mill. Address H. W., Textile World, Boston.

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3 136-Needle Ribbers, 24 and 36 Gauge, 4-inch Cylinder.

3 160-Needle Ribbers, 24 and 36 Gauge, 3 3/4-inch Cylinder.

1 176-Needle Ribber, 36 Gauge, 3 1/2-inch Cylinder.

1 188-Needle Ribber, 36 Gauge, 3 1/2-inch Cylinder.

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A practical Dyer and Finisher who has had charge as supt. for a number of years is willing to take such a position with any woolen mill or knitting plant and at the same time furnish part capital. Address, G. W. H., care Textile World, Boston

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We want a man well versed in the manufacture of cotton batting as well as the designing and manufacture of quilts and comfortables. Address Comfortable, Textile World, 95 South St., Boston, Mass.

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All textile industries are rapidly increasing in the Republic, so there is a particularly fine opening for all machinery and supplies of this class. Manufacturers and dealers desirous of extending their trade, and having reliable articles in lines of staple goods, or novelties, may learn of a favorable opportunity to introduce or increase sales by addressing

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...Why not correspond with...

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A PRIVATE CAPITALIST (middle-aged man) of standing, controlling above amount or more cash capital, desires investment. Would entertain proposition of investing in textile establishment, or some lucrative business on that order. Party investing would expect to become official of company. Business must be on sound foundation. In answering give some particulars. Principals only reply. I am not a financial broker, this is strictly a private matter. All correspondence treated in utmost confidence. PRINCIPAL, P. O. Box 672, N. Y. City.

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(2) **Two Large Oxidizing Machines, 7x10ft.**

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This machinery has been in use 10 months, and is in perfect condition. Bids for all or a part, f. o. b. Barnesville, Ohio, will be considered from parties interested.

Full information upon application.

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Barnesville, Ohio.

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I would like to meet or correspond with a man who has $1,000 to invest in a comparatively new and fine paying industry. I have the knowledge of the business and can furnish rent and power, but have not money to handle the business. Can furnish references as to character and ability.

Address A. M., care of Textile World.

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Special attention given to Bankruptcy Claims and Collections.

SITUATIONS WANTED.

The advertisers in the following columns should be addressed in care of TEXTILE WORLD or inquiries concerning them may be addressed directly to "Information Department TEXTILE WORLD," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

The applications of good overseers in every department, who are in want of positions are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

COTTON SUPERINTENDENTS.

1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

1750 **Wanted.** Position as superintendent of cotton mill by a practical carder and spinner. First-class references from former and present employers.

1532 **Supt.** of cotton mill, a thoroughly capable man, is open to a position. Well up on English and American makes of machinery. Has manufactured yarns both in American and Egyptian cottons, from 17s to 70s. About 40 years of age; Scotch. Has held a responsible position in a New England company for the past 10 years.

1806 **Wanted.** A position as supt. by an up-to-date man full of push and energy. A hustler and a good manager Anyone needing a man to manage their mill will do well to correspond with him. Is up in woolen manufacture of flannels, blankets and jeans; in cotton of drills, sheetings, shirtings and cotton or jute bagging. Wages from $3 to $4 per day and house rent free. Has had long experience on above goods, especially in weaving.

1975 **A Linen Manufacturer,** who thoroughly understands linen and cotton fancy goods and damasks, is open to position as Supt. 40 years of age, Irish, married. Can refer to well-known mill owners. Terms reasonable.

1938 **Supt.** or Supt. and Designer. Age 33; Scotch; married. Fine and plain fancy ginghams, shirtings, fine sheer fabrics, cotton and worsted dress goods, plain and Jacquard silks and Jacquard bed quilts, also print cloths. Crompton & Knowles looms. All kinds of winding, beaming, warping and quilting machinery, also finishing. At present studying picking, carding an spinning machinery.

1957 **Supt.** of cotton cloth or yarn mill, 37 years old, English, married, is open to a position. Thoroughly familiar with coarse and fine yarns up to 150s. Best of references. Will go to any part of the United States.

1772 **Supt. or Overseer of Weaving.** Age 34; American; married. Lawns, fine sheetings and shirtings, sateens, twills, fancies, denims and cottonades. Is familiar with Whitin, Lowell, Draper, Northrop and English machinery. Not at present employed.

WOOLEN SUPERINTENDENTS.

1916 **Agent or Supt.,** who understands designing and also the work of every department, is open to a position. Has been a superintendent for the last 15 years, and is thoroughly competent to take charge of a large mill. Scotch Irish; 38 years old; married. Has turned out all classes of woolen and worsted goods in all wool and in wool substitutes. Is well up in the mixing and blending of stocks. References of the best.

1930 **Asst. Supt.,** woolen or worsted, or overseer of twisting, spooling, dressing. Age 40; American; married. Is familiar with English and American machinery. Excellent references.

1974 **Asst. Supt.** or Designer, woolen or worsted, who understands designing and also the work of every department. Has worked on fine worsteds, coverts, cheviots kerseys, meltons and fancy cassimeres. Technical education acquired at Phila. Textile School. Six years' practical experience, three as designer. Age 24, American, good references. Will go anywhere

1936 **Supt. or Designer,** an American, married, 38 years of age, is desirous of obtaining a position. Understands the manufacture of worsteds, cotton worsteds, cassimeres, meltons—steam face, flannels, and horse and bed blankets. Long experience and up-to date in methods. Moderate wage.

1976 **Manager and Buyer,** blankets, rugs and government cloths. Young Englishman, 30, managing a plant of 19 sets cards and 200 looms in England, desires similar position in the States. Thoroughly practical in every department. Salary according to results

1982 **Supt.** of large experience in the manufacture of woolen and worsted fancies and suitings, is open to an engagement as supt. or designer. Age 45; American; married. Good references.

1983 **Supt. and Designer** of woolen and worsted dress goods or men's wear, is open to a position. 42 years old; American citizen of German extraction. Familiar with jacquard work as well as dobby. Good references.

1829 **Woolen Supt.,** or asst. or dyer. Age 35; American; married. Has worked on kerseys, coverts, worsteds, cassimeres and fancy cottons, etc. Is familiar with Davis & Furber jacks and mules, and Crompton & Knowles.

WOOLEN CARDERS.

1953 **Boss Woolen Carder**, experienced on all classes of wool, all cotton, wool and cotton, and shoddy mixes, desires a position. Is an American; married; 40 years old. Leaving present position on account of shutdown. Is steady, reliable, and can give good references from last employers. Three workers in family.

1617 **Boss Carder or Second Hand.** Has held several first-class jobs also has had experience in spinning. Can accept position at once. All grades of stock, including shoodies, and cotton and wool and all wool.

2000 **Secondhand Carder** familiar with all wool, wool and cotton and shoddy mixes on Davis & Furber and Furbush cards would like to obtain a position. 21 years old, American. Good references.

1944 **Carder**, or carder and spinner. Age 48; married; American. Has worked on all kinds of woolens, and of late on shoddy and cotton mixes. Is familiar with Davis & Furber machines. Excellent reference from past employer.

1903 **Boss Carder**, woolen or worsted mill, desires a position. Experienced on fine and coarse work; 27 years of age; American; married. Can refer to responsible parties. Moderate wages desired. Will go to any part of United States.

COTTON CARDERS.

1968 **Overseer** of cotton carding and combing, who understands setting up and starting new machinery, is open to a position. 33 years old, English, married. Is especially good on fine combed Egyptian and Sea Island yarns. Best of references. Moderate wage.

1919 **Overseer Cotton Carding and** Spinning, who has had an experience of over 10 years in N. E. and New York mills, is open to a position. 26 years old; American; single. Thoroughly competent and reliable. Best of references.

1931 **Overseer of Carding and Combing**; 33 years old; American; single. Has worked on all classes of fine combed work; both American and English machinery. Can take place immediately. 12 years in a large New England mill.

1932 **Overseer of Carding** or would take assistant superintendent position. Age 27; American; single. Carded and combed American, Egyptian and Sea Island Cotton, making yarns from 8s to 100s; both plain and colored goods. Can come at once.

1718 **Overseer of Card Room** desires a position in cotton mill. About 26 years of age, steady and strictly temperate. Has been six years second hand and two years overseer. Best of references.

1991 **Secondhand Comber** or Carder who is at present handling 75 cards and eight combs, is open to a position. 30 years old, French, married. Is familiar with all well known makes of machinery. Good references. Terms reasonable.

2001 **Overseer of Carding** who has had experience in some very large cotton mills in Massachusetts wishes to obtain a position. Understands the running of both coarse and fine goods and is familiar with all makes of cards. 41 years of age; American; married. Good references. Moderate wages.

WOOLEN SPINNERS.

1927 **Overseer Spinning**, carding or flyers. 37 years old; married, and can furnish best of references. Twenty-three years' experience. A German.

1969 **Overseer** of woolen spinning would like a position in a good mill. Has worked on woolen, cotton mixes, and shoddies from 1 to 38s. 26 years of age, temperate and steady. Good references.

1987 **Overseer** of woolen spinning desires to make a change. Is familiar with suiting, union, cassimere, satinet and knitting yarns and all ordinary makes of machinery. 30 years of age; American; married. Good references as to character and ability.

1956 **Overseer Woolen Spinning**, 34 years old, American, married, desires position. Understands Johnson & Bassett, Davis & Furber, Cleveland Bros. and Woonsocket mules; and has made all wool, merino and shoddy mixes. Can give good references.

1941 **Boss Spinner.** Wants $3.50 or more. One daughter a spooler and twister. Excellent references. Is familiar with Davis & Furber, Johnson & Bassett, and other makes of machinery.

1999 **A Secondhand** of Worsted Spinning, who has had experience on open and cone drawing in some of the largest mills in Massachusetts, is desirous of obtaining a position. 34 years old. Good references. Reasonable wages.

COTTON SPINNERS.

1960 **Overseer of Cone Winding** and spooling or ring spinning, who understands Universal, Foster, Broadbent and Payne winders, and Whitin and Mason frames, desires a position. Has worked on carded and combed yarns from 4s to 160s; also, mercerized, gassed and bleached yarns from 2 to 8 ply. Young man; American; married, and can give satisfactory references from large mills.

1950 **Overseer** or second-hand of cotton mule spinning desires a position in the Southern States at reasonable wages. Is a good fixer and has made yarns ranging from 4s to 40s. 39 years old; German; married. Best of references. One worker in family—drawer in.

1882 **Wanted**, position as overseer of spinning, warping and slashing. 25 years' experience North and South. Can get off production close to 95 per cent. capacity of frames. One half salary may be held subject to forfeit if I don't fill the bill. References. Age 40. Family.

2003 **Overseer of Mule Spinning** who has had a wide experience in large New England mills on yarns ranging from 24s to 160s is open to a position. 37 years old; American. Good references.

1984 **A Secondhand** of mule spinning would like a position in a cotton mill. 24 years of age; American. Is familiar with almost all kinds of stock and thoroughly understands Mason mules. Best of references. Is willing to go South.

1519 **Overseer Spinning.** Age 31; American; married. Has worked on yarns from one run to 5¼. Will accept an average salary. At present employed, but wishes to better himself.

WOOLEN WEAVERS.

1940 **Boss Weaver or Designer**, or could fill a position as all around man in a small mill. Age 42; Scotch; married. Worked on fancy cashmeres, blankets, flannels, carriage robes, and other fancy goods. Is familiar with Crompton & Knowles, Davis & Furber, and other looms. Wants to go West or South.

1947 **Boss Weaver**, designer or superintendent. American; married; age 36. Fancy cassimeres and worsted cloakings; most all grades of goods for ladies' and gents' wear. Crompton & Knowles and Davis & Furber looms and Jacquard.

1959 **Boss Weaver**, who is familiar with cotton, woolen and worsted looms and all classes of goods, is open to a position in a large mill. 46 years of age; American; married. Strictly temperate and is recommended by some very large N. E. woolen and cotton mills.

1964 **Boss Weaver**, familiar with all makes of woolen and worsted machinery, and who has worked on ladies' dress goods and men's wear, desires a position. 39 years of age; American; married. Can give good references.

1949 **Boss Weaver**, capable of taking entire charge of a small woolen mill, will be open to a position in a few weeks. 44 years old; American; married. Familiar with all classes of woolen and worsted goods. Good references. Three workers in family.

COTTON WEAVERS.

1992 **Boss Weaver** who also understands the management of drawing-in, pattern and slasher rooms, is open to a position. Is familiar with all ordinary makes of cotton looms and has handled ginghams, Shirtings, dress goods, etc. 26 years old, American, married. Good References

1985 **Overseer** of cotton weaving, thoroughly familiar with the weaving of cotton duck, sheetings, drills, twills, stripes, osnaburgs, and all plain goods is open to a position. Understands Lowell, Crompton & Knowles, Draper, Lewiston, Whitin, Bridesburg, English and Clipper looms, and several other makes. 34 years of age, American, married. Terms reasonable. Good references.

1826 **Wanted by Steady, Industrious** man, a situation as overseer, in Tape mill. Has had considerable experience, but does not know everything, but willing to improve. $2.25 per day. Has been overseer a short time, and has perfect control of help. Age 46; English; married. No family. Would go anywhere, and settle

1235 **Cotton** man wants position as overseer of cotton weaving. Prints, twills, satins, denims, cheviots, lenoes, etc. Crompton, Knowles, Lowell, Whiting and English looms.

1536 **Boss Weaver or Superintendent**. Age 43; married; American. Can run any department in woolen mill, having been in business for himself. Not at present employed. Can take position immediately.

1998 **Boss Weaver** at present handling about 1,000 looms on fancy and plain goods, wishes to obtain a position. Familiar with Stafford and Crompton heads, Mason Kilburn, Lincoln, and Whitin looms. 39 years old; English; married; 3 weavers in family. Good references.

KNITTERS.

1943 **Fixer or Foreman.** Age 27; American; married. Has had five years' experience on knitting machines, including Standard B and C machines, can handle new Victor machines, also sewing machines. Wants to change on account of location.

1945 **Asst. Supt.**, or overseer of a large stitching department in knit underwear mill. Wilcox & Gibbs sewing machines, Union Special and loopers.

1989 **Boss Knitter**, underwear, who has had a wide experience on wool, worsted silk, lisle and cotton mixed underwear, is open to a position. Familiar with McMichael & Wildman, Nye & Tredick, Snyder & Fisher, Stafford & Holt, ribbed machines; Tompkins, Campbie & Clute, spring needle. 34 years old, German, married. Good references.

1961 **Supt. or Manager** of large hosiery yarn mill will be open to a position shortly. American; married. Has manufactured in the South hosiery yarns in natural state, mixtures, silver grays, bleached and colored. Can refer to influential men.

1951 **Overseer** of cuff knitting, who thoroughly understands fixing Tiffany and Cooper machines, wishes position. 45 years of age; English; married. Good references.

1939 **Boss Knitter.** Age 42; English descent; married. Has one girl who is a winder. 11 years as foreman knitter in one mill, and for the past seven years in full charge of knitting and winding in a mill, but wants to change on account of locality. Campbell & Clute, Tompkins and Crane machines. Balbriggan underwear, fleece lined and two-thread work, also fancies. Worked mostly on woolen goods.

1824 **Boss Knitter or Fixer** on ribbed underwear. Has worked on fancies, double knees and tops and plain work. Is familiar with Brinton & Denny, McMichael & Wildman, Huse and Pepper machinery. Will work for $2.50 or more, according to position.

1906 **Supt. or Agent** of a hosiery mill is open to a position. Thoroughly understands spinning, dyeing and is familiar with all well-known makes of knitting machinery. American; 28 years old; single. Has been superintendent for the last seven years in a large plant. Best of references.

1971 **Foreman** of men's underwear who is familiar with Nye & Tredick, Snyder & Fisher machines, etc., is open to a position. Thoroughly understands cutting. Age 35, American, married. Is a steady, competent man and understands his business. Good references.

1993 **Boss Knitter and Fixer** on ladies' and gents' ribbed underwear on S. & W., N. & T., M. & W., B. & D., S. & H., Huse, Champion, S. & F. machines is open to a position in any part of the United States. 30 years old; American; married. Good references. Wants $4.

1657 **Superintendent or Foreman** of seamless hosiery familiar with cotton and woolen goods on Scott & Williams, Electric, Acme, Standard and several other makes, ribbers, loopers, sewing machines, etc., is open to a position. 40 years old; American; married. Best of references.

1951 **Cuff Knitter and Fixer.** Wants a place where he will have steady work.

DYERS.

1972 **Boss Dyer** of large experience on cotton, cotton and wool, shoddy waste, camel hair raw stocks; all wool flannels, ladies' dress goods, worsteds, friezes and Union piece dyes; and skein dyeing, hosiery, etc., is open to a position in a woolen, worsted or hosiery mill. 50 years of age, English (naturalized), married. Best of references. Terms moderate.

1995 **Boss Dyer** who has been 12 years in a large Connecticut woolen mill is open to a position with any good concern. 40 years old; American; married. Piece dyes, yarns, mohair, wool stock, indigo vats, fancy shoddies and raw cotton. 17 years' experience. Good references. Terms moderate.

1979 **A Boss Dyer,** who has been assistant dyer in one of the largest mills in the United States for the last ten years, is desirous of making a change. Is familiar with wool slubbing, worsted yarn, and pieces; cotton raw stock, skein and warp yarn, pieces, and also Union goods. Understands all modern dyeing machinery. Best of references. Salary moderate.

1966 **A Color Mixer,** chemist or cotton piece dyer is open to a position English; 30 years old; married. Was assistant manager of large print works in England for three years, and can refer to well-known men. Terms moderate.

1505 **Boss Dyer.** 11 years experience coloring according to the requirements of the trade, on all kinds of wool, worsted yarns, worsted piece dyes, cotton warp worsted piece dyes, cotton and shoddy piece dyes, shoddy, raw cotton and cotton yarns. Willing to work for reasonable wages.

DESIGNERS.

1996 **Designer or Assistant Superintendent** desires a position. 27 years old; Scotch; married. Familiar with all well known makes of machinery and with woolen, worsted and cotton goods. Good references. Will go to any part of the United States. Terms reasonable.

1997 **A Young Man,** 23 years of age, English, would like a position as assistant designer or boss weaver. Has worked on woolen dress goods, cloakings, suitings and worsted suitings. Good references. Moderate wages. Three weavers in family.

1117 **Designer, Boss Weaver** or Superintendent, familiar with fancy cassimeres, fancy worsteds, dress goods, golf goods, plaid backs, coverts, shoe cloth, unions, etc., is desirous of obtaining a position. 40 years of age; American; married. Best of references. Terms moderate.

1962 **Designer,** boss weaver, or both, desires a position in a woolen or worsted mill. Is at present employed as designer and boss weaver on worsted and woolen dress goods and suitings, and giving satisfaction. 30 years old; Swede; married. Expects moderate salary. Will go to any part of the United States. References from well-known textile men.

1923 **Assistant Designer** on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references.

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THE greatest need of the textile industry is skilled help. Better positions are open everywhere for men who have a technical knowledge of textiles. For years we have been teaching by mail and helping our students earn more. Our course in cotton spinning, woolen and worsted spinning; cotton, woolen and worsted warp preparation, weaving and finishing; textile design, fabric structure and cloth analysis, chemistry, dyeing and other branches of

TEXTILE ENGINEERING

qualifies second hands, third hands, section hands, loom fixers and all bright young men for positions as overseer of spinning, carding, dyeing, weaving, etc.

Studies are carried on at home and need not interfere with the student's regular work. A few

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Handbook describing courses, methods and regular terms on application.

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FINISHERS.

2004 **A Boss Finisher** of over 25 years' experience on fancy cassimeres, worsteds, dress goods, serges and a large variety of steam finished goods, beavers, kerseys, cloakings, meltons, cheviots, etc., is open to a position 44 years old; American; married. Good references. Moderate terms.

1526 **Foreman of Finishing Room,** Folding Packing, etc. Age 45; married; English. Has worked on white and colored goods and prints. Is acquainted with every kind of machinery used in his business. Has worked 20 years in this country. Can give good references.

1990 **A Foreman** in Finishing room on all kinds of cotton piece goods. Accustomed to all kinds of folding, packing, etc., and machinery used therein. English, married, age 36. Five years in last situation. Has been in this country 12 years. Can give references from present and past employers.

1921 **Boss Finisher** of a satinet mill or secondhand of a woolen mill, would like a position. Has held these positions in good sized mills, and is familiar with satinets and woolens. 23 years of age; American; single. Good references as to steadiness, reliability and quality of work.

1970 **A good Second-hand Finisher** who thoroughly understands Union cassimeres, meltons and satinets, would like a position. 30 years of age, American, married. Well up on all well-known makes of machinery, and capable of taking a boss job. Good references. Reasonable wages expected.

MISCELLANEOUS.

1994 **Wanted** a position in either mill or selling office of a textile manufacturing business by an American of extensive practical and theoretical knowledge in all textile branches, well versed in German and French. Age 28 years. Can furnish best of references.

1988 **A Young Man**, 23 years of age; American; who has had 18 months' experience in a woolen mill and is at present a student in a textile school, is willing to begin at the bottom of the ladder with a good mill where there is prospect of advancement. Small pay to start. Good references.

1980 **An Expert** on soap making and wool scouring will be open to a position shortly. Is familiar with the treatment of all grades. About 40 years old. English; married. Has worked for one concern in the United States for 12 years.

1981 **Master Mechanic;** 46 years of age; American; married; who has been employed in large cotton mills in the country is opened to a position. Is a practical man and thoroughly understands cotton machinery. Best of references from well known mill men.

1924 **Assistant Supt.**, boss spinner and boss dresser desires a position in a woolen mill. 39 years of age; an American; married. Has worked on all classes of woolen goods on both English and American machinery. Good references from former employers. 15 years' experience.

2002 **Asst. Supt.** or Master Mechanic. Position wanted by an American young man with 12 years' experience, capable of anything from a new building to complete operation of a dye, bleaching and finishing plant on cotton goods Knowledge of drawing and electricity.

1914 **A Young Man** who thoroughly understands the keeping of mill books would like a position in the Southern States or would go to Cuba or Puerto Rico Is a first-class man and perfectly familiar with general office work. An American; 22 years of age; single. Steady and reliable, and can give good references.

NARROW FABRICS, ETC.

An expert with long experience in the manufacturing of Tapes, Braids and Edgings, capable of designing building and overseeing the building and installation of the necessary automatic machinery, which may be patented, also with a perfect knowledge of the manufacturing of cast steel hive Heddles, desires to correspond with a reliable house in regard of establishing therein the above machinery. EXPERT, care Textile World.

WANTED:

More assistants to apply my Grid for Lappers in cotton mills; 2 at once, and more a little later. Permanent employment guaranteed to satisfactory men. Second-hand carders or mill machinists with some education preferred. Applicants should be between 18 and 25 years old, not married. State past experience and what pay expected besides board and traveling expenses. State also circumference of head, or hat number, which should not be less than 7, and enclose photo. Address Rob. Schaellibaum, P. O. Lowell, Mass.

For a cultured young man with cotton mill knowledge, and knowing well French or German or both, I would have a very good place as traveler and agent in Europe.

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Our business is to qualify ambitious people for better positions and better pay. We have been doing this for ten years and can prove that we know how. Recently we purchased the American Correspondence School of Textiles, of New Bedford, Mass., C. P. Brooks, Director. Our unique system of training people by mail for better positions (which we help them get) is now open to any textile worker that wants to qualify for better pay. Cut out, fill in, and mail the coupon below.

International Correspondence Schools,

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Please send me free Circular F, explaining how I can qualify for the position marked (X) below.

	Cotton Mill Supt.		Dynamo Tender
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	Boss Woolen Carder		Architect
	Boss Woolen Weaver		Arch. Draftsman
	Woolen Designer		Sign Painter
	Cotton Designer		Letterer
	Mechanical Engineer		Chemist
	Machine Designer		Ornamental Designer
	Mechanical Draftsman		Navigator
	Foreman Machinist		Bookkeeper
	Foreman Toolmaker		Stenographer
	Foreman Blacksmith		Teacher
	Foreman Molder		To Speak French
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Name _____

Occupation _____ *Age* _____

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If so, we can reduce your leather bill considerably, and in addition, save you money in other ways. Just exactly how much will depend upon circumstances, 25% perhaps; 75% probably. We propose to accomplish this saving by having you adopt VICI leather in place of that which you are at present using. We finish the VICI leather in all conditions, from the soft oily picker leather to the hard firm roller covering. VICI leather is acknowledged the world over by leather men and consumer alike as being the STRONGEST LEATHER MADE. There is nothing experimental about it. The same process of tannage applied to KID, produces the celebrated VICI KID which has revolutionized the shoe industry; and VICI MECHANICAL LEATHERS in the shape of belt, mill strapping, roller covering, picker leather and hydraulic valves have been in successful, practical use for several years. If you will send us your requirements in mechanical leathers, whether it be a strap, friction disc or hydraulic valve, we will submit samples, which you will not be asked to pay for, unless by actual trial they prove satisfactory both as to price and quality. Remember, we are not offering you cotton, rubber or other substitute for leather, but on the other hand we take precisely the same skin as you are at present using and, instead of tanning it by the old fashioned oak process, we apply the VICI process, which process has demonstrated its success beyond a doubt.

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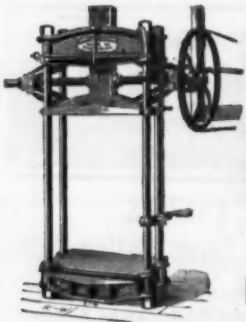

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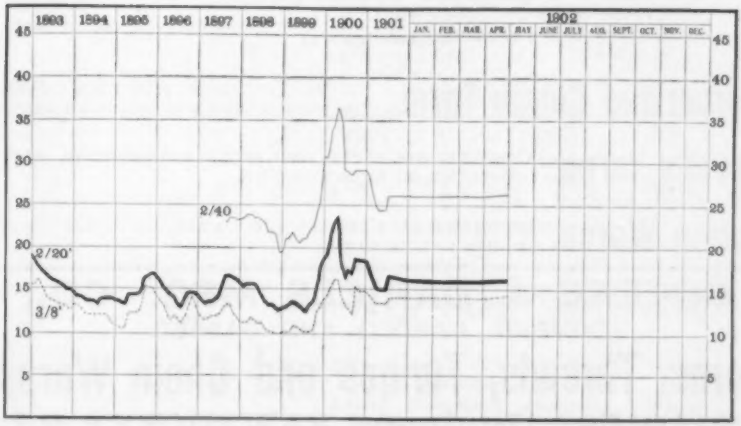

GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Eastern Yarn Market.

Prices have advanced since our last report in sympathy with the rise in the price of raw material. Sales, however, have not been stimulated to a like extent, but on the contrary buyers, both knitters and weavers, have been very reluctant to pay any advance, and the pronounced views of spinners have resulted in restricting purchases. Until spinners and weavers can see prospect of selling their yarn in the form of cloth or knit goods, they are not likely to fill their storehouses, especially at advanced prices.

On the other hand, where orders for goods have been secured, they have been covered by contracts for yarn at higher prices, but these contracts have not been made very cheerfully by buyers.

The talk of a combination among the Southern yarn mills has had a strengthening effect on the yarn market, and whether this combination is effected or not, it is certain that the general sentiment among spinners against the ruinous policy of over-production that has prevailed during the last two or three years, will certainly bear good fruit in the future, and buyers of yarn are not likely to see very soon a repetition of the glut that has depressed the prices of low grade yarns.

The negotiations look to a combination of the Southern cotton yarn mills with a proposed capital of $60,000,000, and plans have been submitted to mill owners and received by them with considerable favor, but the deal has not yet been closed.

For many months the Southern yarn mills have been suffering from a large over-production of low grade yarns; this condition has been brought about by individual manufacturers working independently of their competitors and striving to turn out as large a production as possible. As they were all depending on the same market, it was inevitable that such a policy would cause a glut in the market; our monthly report of the yarn situation has for over a year been a monotonous repetition of depression in low grade yarns.

Experience is a dear school, but a good one, and the losses that manufacturers have suffered from this condition of affairs has, undoubtedly, had a great effect in popularizing the idea of a combine. Their recent experience leads them to favor a combination of their mills, by which the total production may not exceed the demand. Manufacturers are emphatic in their statement that at the present prices for coarse yarn and raw cotton no profit in manufacturing is possible. 1,000,000 spindles are represented in the new deal.

The trade is inclined to look upon the rise in the price of raw cotton as being due to speculative interests, and for that reason are not disposed to favor a corresponding rise in the price of yarn.

We quote as follows:—

Cops.

6s	15
8s	15½
10s	16
14s	17
16s	17¼
22s	18¾
24s	19½
26s	20¼
30s	21-21½
34s	22-22½
36s	22¼-23¼
40s	24½-25

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GREENE & DANIELS MFG. CO.,
COMBED, CARDED AND GASSED
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On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

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12s	17-17½
14s	17¾
15s	18¾
20s	19¼
22s	19¾
26s	21
28s	21½
30s	22
36s	24½
40s	26½
45s	28½
50s	32½
55s	35½
60s	41

Eastern Two-Ply Warps, Carder Peeler.

2/20s	22½
2/26s	24½
2/30s	26½-27
2/45s	29-29½
2/50s	33½-34
2/60s	42-43

Egyptian Weaving Yarns.
Single Skeins Combed.

20s	31½-32½
25s	33½-36½
40s	35-35½
45s	36-37
50s	39-40
55s	41½-42¼
60s	49-50
70s	56½-57
80s	67-68
90s	71-72

Two and Three Ply Skeins, Combed.

30s	33-34
36s	35-36
40s	36½-37
45s	37-38
50s	42-43
55s	46-47
60s	48-49
65s	53-54

Philadelphia Yarn Market.

The continued advance in cotton has stimulated considerable buying of yarn, and has enabled spinners to put their prices up, so there is a sharp advance in some sorts of yarn. However, it is no more than cotton has advanced, possibly not as much. Spinners claim the advance is not doing them much good.

The demand is good for all sorts of yarn, and, as the cotton market looks as if the staple would be high for the balance of the season, there is no immediate prospect of any lower prices.

We quote:—

Charlotte List.

7s and coarser	14½
8s and 9s	14¾

Southern frame cones (good quality):—

10s	15
12s	15½
14s	15¾
16s	16¼
18s	16¾
20s	17

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
120 Chestnut Street, Phila. 530 5th Ave., Chicago, Ills
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

JAMES E. MITCHELL & CO.,
COMMISSION MERCHANTS.
COTTON YARNS
FOR ALL PURPOSES.
122-124 Chestnut St., PHILADELPHIA, PA.
Brown Building 165 Summer St., BOSTON, MASS

LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished

J. S. DODDS,
517 Wool Exchange, New York, N. Y

MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

A. D. SALKELD & BRO.
With
FRED'K VIETOR & ACHELIS.
YARNS,
66-72 LEONARD ST., NEW YORK.

MOELLER & LITTAUER,
IMPORTERS AND MANUFACTURERS OF
Silk, Worsted, Woolen, Cotton & Mohair Yarns and Tinsel. Chardonnet Artificial Silk.
Mercerized, Turkey-Red, Swiss Emb. Yarns.
109 Green St, NEW YORK.

E. C. HARPER.
WORSTED AND WOOLEN YARNS,
MERCERIZED COTTON,
395 Broadway, New York.
Tel. 1828 Franklin.

Eddy & Street,
COTTON, WOOLEN, YARNS AND BRAIDS WORSTED, SPUN SILK.
PROVIDENCE, R. I.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.

COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Over 20,000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY of DESIGN"

DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND ECYPTIAN COTTON.

Indian-Orchard-Company.

Cotton Warps and Yarns, in Gray and all Colors, Single or two or more Ply, and Cable Cord.

Novelty Yarns, in Various Patterns, Colors and Twists.

Carded and Colored Cotton, For Mixing with wool, Machined or in Roving.

Indian Orchard, Mass.

E. MORGAN, PRES. H. K. WRIGHT, TREAS. W. C. GODFREY, AGT.

22s	17½
24s	17¾-18
26s	18½
30s	20-20½
40s	26-27
50s	32-33

Southern high grade mule yarn:—

Cones.

10s	16
12s	16½
14s	17
16s	17½
18s	18
20s and 22s	18-18½
24s	18½-19

Southern frame yarn, lower grades:—

6s and 8s	14-14½
10s	14¾

Eastern cones (high grade quality):—

10s	16½-16¾
12s	17-17¼
14s	17½-17¾
16s	18-18¼
18s	18½-19
20s and 22s	19-19½

Lower grades, Eastern yarn:—

6s and 8s	14-14½
10s	14¾-15

Rise ¼c. per number to 16s.

Besides this, there is some comber waste used, that is made into 8s and 10s cones and sold at 14½-15.

Skein yarn (mostly Southern):—

4s to 6s soft	14-14½
10s to 12s	14-14½
14s to 20s	14½-16
22s	15½-16
14/2	15-15½
16/2	15¾-16
20/2	16¼-16¾
30/2	18½
40/2	23-24
16/3 slack	16-16½
12/3 slack	15
8/3 carpet	14-14½

Skein yarn (mostly Southern):—

8/3 slack	14½
9/4 slack	14½

Warps (mostly Southern):—

14s to 16s	15¼-15¾
20s and 22s	15¾-16
26s	16½-16¾
14/2	15½
16/2	16
20/2	16½-16¾
24/2	17-17½
30/2	18½-19
40/2	23-24
40/1	24-25

Mixed colored yarns (mock twist, half colors):—

6s to 10s	15½-16
12s to 14s	16½-17½
16s to 18s	18-19

Silver and jaeger, 1½ to 2c. over white.

Mock Egyptian, 3c. advance over white.

Egyptian, 4c. to 5c. above best quality white.

Worsted Yarn.

Spinners continue busy on old orders which are nearing completion and within the next two or three weeks will be on the market for further orders.

CATLIN & CO.,

YARNS.

67 Chauncy St., Boston
216 Church St., New York.
306 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co.

FANCY HOSIERY YARNS

IN ALL COLORS.

New York Mills, Oneida Co., - N. Y.

E. JENCKES MFG. CO.

Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.

PAWTUCKET, - R. I.

TUCKER & COOK MFG. CO

MANUFACTURERS OF

WHITE AND COLORED COTTON **WARPS**

Nos. 6s to 30s,

On Beams, Jack Spools or in Chain

CONWAY, MASS.

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40s and above. AND

FITCHBURG, MASS. **WARPS**

COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS

Mercerized Cotton a Specialty

Write for Samples.

E. A. MORGAN & CO.,
54-56 Franklin St., N. Y. City.

EICHMANN & STERNBERG

530 Broadway cor. Spring St., NEW YORK.

Mercerized, Turkey Red, Gassed } Cotton Yarns.

Jacquard and Harness Twines.

C. MOORE & CO.,

MANUFACTURERS OF

TWINES, THREADS AND YARNS.

Jacquard Harness Twines of all kinds on hand and made to order.

S.W. COR. FIFTH & MARKET STS.,

Philadelphia.

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:

Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
987 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

Worsted YARNS,

ALL NUMBERS SINGLE AND TWO-PLY,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes.
Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns only.

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. CAMDEN, N. J.

Albert Herbst & Co.,

EMERALD WORSTED MILLS,

East Allegheny Avenue,
Emerald and Wishart Sts.,
PHILADELPHIA, - PA.

MANUFACTURERS OF

Worsted Yarns

FOR KNITTING AND WEAVING.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

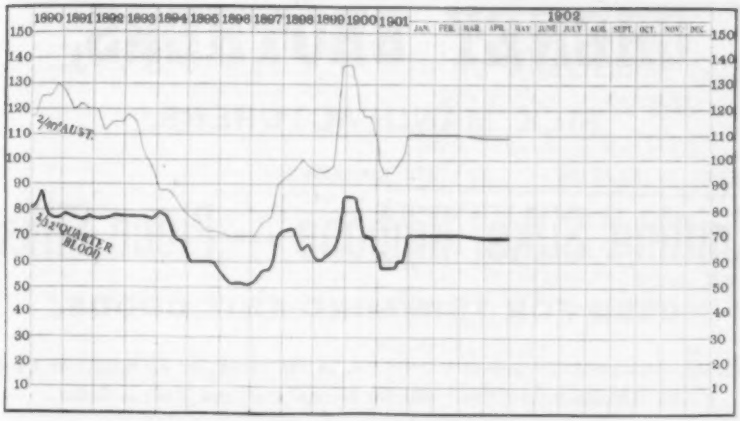


CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

Spinners are not inclined to make concessions even though short of orders. Spinners argue that that business did not start last year until July and while in June spinners were without orders, in July their mills were crowded and all were sorry at taking orders on too close a margin.

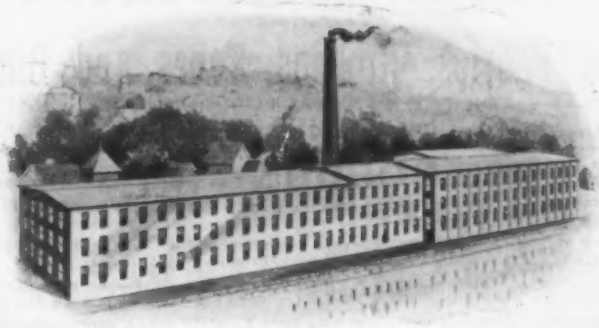
The spinners' supply is not equal to the demand under the present method of production, when buyers of cloth insist on weavers turning out 6 months' supply in 2 months.

The weavers feel that the present is the best time for them to place orders, but as the cloth buyers are waiting, the weavers, from caution, are waiting also. The weaver has been caught so many times when trying to anticipate his wants and is getting cautious. We know of several mills which ordered yarn in November, and give written orders at that, who have been unable to take the yarn ordered or even give shipping instructions. This was particularly the case of clay worsteds.

The weavers had a good business on this line of cloth up to January, when

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

QUEENSBURY MILLS,
FLYER SPUN



MOHAIR TOPS
AND YARNS FOR WEAVING.
LUSTRE YARNS
FOR SERGE LININGS.
Worcester, Mass.

CHENEY BROTHERS,

SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut St., PHILADELPHIA.
79 Chauncy Street, BOSTON.
186 Franklin Street, CHICAGO

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

F. C. BARTON,

Manufacturer of

Narrow Fabrics, Ribbons, Tapes and Bindings

FOR THE MANUFACTURING TRADE.

Telephone, 2520 Franklin. **54-56 Franklin St., NEW YORK.**

FIRE HOSE CORDS { From long staple cotton—6s to 20s yarn in 2 to 100 ply—16 lbs. without a knot.

COTTON WARPS { On beams—single or ply yarns, grey, bleached or colored.

GLAZED YARNS { All plys—any color—for braiders, harness and sewing threads.

UNIVERSAL WIND { For braider cops—warp yarns—grey or colored—2 inch to 12 inch traverse.

Dyeing facilities are new and best quality work guaranteed.
We are prepared to dye yarns for other parties.

WHITTIER MILLS, Selling Office, Springfield, Mass.
Mill, Chattahoochee, Ga.

the price was cut to such an extent that there was no business. Some of the weavers took the yarn and it is piled up in their mills without orders for cloth. Said one weaver of clays, "We have 500 dresser spools at our mill at the present time."

Other weavers who did not take the yarn ordered stated that while they expected and were sure of getting good orders, that they could not get the cloth out at prices paid for the yarn.

Of course the spinner who is selling these weavers largely of other yarn cannot or does not feel inclined to force the weaver to take this yarn, and as the result, the spinner has his wool and no immediate prospect of working it. As the amount is comparatively small, the spinner will not suffer greatly, but there are other instances where it was a serious matter for both the spinner and weaver; for instance, manufacturers who bought yarn during the boom had to be helped out of their difficulty. Some independent weavers are very busy and some are running all night with three shifts of help, while others are running with two shifts; by this method, these mills are more than doubling their production. This is made possible by the large number of idle weavers.

The demand is largely for fancy worsted cloth. Clay worsteds are not doing well, but this is liable to change so that mills will sell up for one year ahead; buyers seem in no hurry to fill up on staple cloth, and it may be that some importations may be expected.

Cheviots are doing well, as are overcoat linings and French undressed worsteds. The dress goods manufacturers have been very busy, and have been hurrying to get out sample pieces; these goods have been forwarded by express.

The duplicate orders will also be large. It is mostly for black goods, such as sackings and other styles of plain dress goods that the run has been on. One thing seems certain, that buyers of staple goods will awake to the fact that they want cloth and that there is no cloth to be had because the immense curtailment of production will seriously effect the clothing trade in the near future.

The strike is curtailing the production of some of the spinners, but the increased demand for goods from the independent mills has more than offset this curtailment.

French spinners continue busy, but most of the orders have been secured from the weavers, although the knitters are buying much fine yarn for Jersey cloth and for the backing of stockinets.

The hosiery knitters are using considerable worsted, but there is no money in hosiery for the manufacturers at present

TRY OUR
Silkine also Lisle Silk
FINISH
For Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, - R. I.

RICHARD CAMPION,
Selling Agent for—
Bristol Worsted Mills,
Highland Worsted Mills.
17 Bank Street, Philadelphia, Pa.

WOOLEN and MERINO
YARNS.
EATON RAPIDS WOOLEN MILLS,
Eaton Rapids, Mich.

JAMES SPEED,
WORSTED and WOOLEN
YARNS
A SPECIALTY.
ALSO TOPS.
170 SUMMER ST., BOSTON.
Long Distance Tel. 4168-2 Main.

WOOLEN AND MERINO YARNS,
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL,
Leominster, Mass.

J BROADBENT & SONS,
WOOL SPUN YARNS.
YARNS FOR FLEECED LINED, and general Knit Goods our specialties. Equipment first-class. Prices low. Custom work of any kind. Get our figures.
UNIONVILLE, CONN.

FOR SALE.

COTTON WASTE,
Card Strips, Oily Card, Peeler, Sea Island and Egyptian Comber.

MANUFACTURER OF

Wool and Cotton Mixed Shoddies,
Camel Hair, Natural and White.

BUYERS of all kinds of hosiery and woolen and cotton Mill Wastes.

Chas. W. Becker, Agent, Amsterdam, N. Y.

SHODDY WM. H. H. SLACK & BRO.,
Springfield, Vt.

Carbonized Stock a Specialty. **FLOCKS**

M. B. SCHWAB, Pres. H. RAWITSER, Treas. ED. GLUECK, Sec. and Gen. Mgr.

RIVERDALE WOOLEN COMPANY,
MANUFACTURERS OF

SHODDIES OF EVERY DESCRIPTION.
CAPACITY 7,000,000 POUNDS PER ANNUM.

CUSTOM CARBONIZING AND GARNETTING A SPECIALTY.

RIVERDALE, NORTHBRIDGE, MASS. New York Office: 140 Duane Street.

WE BUY FOR SPOT CASH any Kind or Quantity Jobs of Woolens and Dress Goods. Seconds, Remnants, Odds and Ends a Specialty. **Drop us a line and we will call.**

H. & D. FEINGOLD, 89 & 91 Bedford St., Boston, Mass.
Telephone, Oxford 1431-2.

prices, because the orders were taken before the advance came for yarn and the knitters had no yarn ahead and hence were forced to pay the advance.

Much merino worsted, French spun, is being used, but orders were placed largely early in the season. Top makers continue busy with prices well maintained. While it cannot be said that there is an active business yet, so far as the spinners are concerned, there is no decline in prices.

Prices:—

2/40s Australian	1.10
2/40s XX Delaine	1.02½
2/40s Half Blood	.95
2/20s Half Blood	.82
2/36s ⅝ Blood	.75
2/26s ¼ Blood	68 to .70

Woolen Yarn.

Spinners continue busy and with orders which will last well into the year. Spinners are only able to look after the wants of old customers and are running on orders secured the latter part of last year.

The overcoating trade is buying largely of yarn from outside sources, as is the flannel trade. Weavers are using much yarn for backing and other purposes.

There is considerable demand for yarn from manufacturers of sweaters and also manufacturers of caps; the mills are so busy that they will not attend to this class of business unless specially fitted up for this work.

Spinners find it difficult to get out samples for prospective customers, because sample lots mean curtailment of production, and curtailment of production means a loss to the spinners.

We note that while buyers of yarn are gladly taking the yarn purchased, yet they will not anticipate wants even though the wool market is favorable for them to do so. They state that they do not know how much more yarn they will require, and are not inclined to take chances. We find this spirit of conservatism prevailing among all manufacturers; stocks are being allowed to run down, and mills will not replenish. They state that they bought yarn before

anticipating an advance which did not materialize. But these manufacturers did not state that which is a fact, that they waited until stock had already advanced before ordering.

Knitters buying yarn in which there is considerable cotton used, want to get their orders placed, for, while they seem to be afraid of cotton, yet they do not fear wool. But they will place no orders even in this instance until the sample lots have been received and carefully tested.

We find that the buyer is continually trying to cheapen his wares. Where he has been selling something above price the year previous, he tries this year to make a lower price by reducing the cost of his garment by taking out a certain percentage of wool or lowering the grade of his goods, trying to make them look the same at a cheaper price.

We note that many knitters who have been running fleece lined garments are now beginning to manufacture all wool garments.

The West has ordered well this year, but almost wholly of the medium goods, and mills are busy on this class of work.

Some of the mills running an established fine line of underwear are having very good business, but the cheaper class of work is always made first, and the better grades are made last. We also find a good demand for the better class of goods and some of the mills are making better samples; in fact, some of the mills tried such poor stuff that they were obliged to get out fresh samples of a better make, requiring a better class of yarn.

Knitters state that there is no crazy boom, but that there is a good, steady business, but for all this there is comparatively little if any buying. It may be that the present time is between seasons and that next month will see a renewed activity.

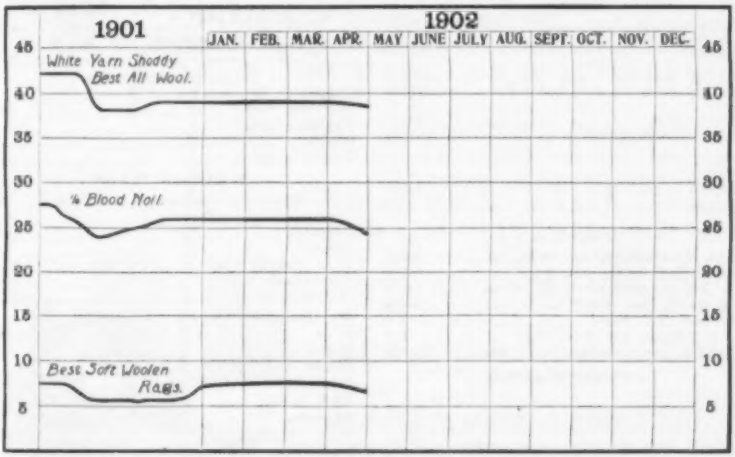


CHART SHOWING RANGE OF PRICES Of SHODDY, RAGS AND NOIL.

Shoddy Market.

Quotations in shoddies are about the same as those of last month. Most of the mills are busy, either on duplicate orders or on the originals. Although the market is very quiet, there is no feeling of dissatisfaction, for the present dullness is not altogether unexpected. Duplicate orders do not materialize rapidly. We have reason to believe, however, that a few weeks will show a much larger per cent. of these on hand than today. Already there is some talk among the goods men about heavy weight samples and some speculation among the shoddy men as to the general characteristics of these. A few years ago this overlapping of seasons would have created some astonishment, but today the demands of the selling house and the vagaries of the manufacturer do not elicit even momentary surprise. The transaction of a fair amount of business during the remainder of the present season is to be expected.

NOILS AND WOOL WASTE.

During the last few months the noil market has ruled very quiet. The stock on hand is large and is still growing. There has been so little demand that new quotations have not until recently been established. Sales made during the past few weeks have, however, determined a new set of rates, which are here quoted and which show a generally lower schedule. There seems to be no immediate prospects of a change for the better.

In cotton wastes a material advance is to be noted over the quotations of April, and there is every reason to believe that rates will be higher by the middle of May. Some houses are already importing stock.

RAG MARKET.

A general dullness and lack of interest prevails in this market. Coarse stocks are scarcely moving at all, and this also applies to softs. There is still some demand for worsteds. Fine dark and fine light stocks are receiving more attention than any other grade at this time. The present lethargy is not expected to hold indefinitely and more interest will probably be shown before the end of this season. Our quotations are practically unchanged.

WILLIAM B. CHARLES,
COTTON AND COTTON WASTES.
AMSTERDAM, N. Y., U.S.A.

COTTON YARNS. **Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited.**
Shepperdson's Code, 1878. Cable Address "Charles."

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.
Established 1860—Incorporated 1893.

THE S. BLAISDELL, JR., CO.

COTTON Egyptian, Peruvian, **American Long Staple a Specialty.** Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

NOILS.

Australian	48-50
Fine domestic	40-44
½ Blood	35-37
⅜ Blood	27-30
¼ Blood	23-26
Braid	21-22
Carpet (white)	14-18
Carpet (colored)	10-12½
Seedy.	
½ Blood	24-28
⅜ Blood	22-23
¼ Blood	17-19

FLOCKS.

Shear, fine white, all wool	10-12
Fine indigo blue, all wool	9-9½
Fine black, and blue, all wool	7½-8
Fine dark, all wool	6-6½
Gig, fine, all wool	3-4
No. 1, black, all wool cut	6-7
All wool, fancy, shear and gig	2½-3½

COTTON WASTE.

No. 1 Spinners	8
No. 1 Machine	5-5½
No. 2 Machine	4½-5
Machine Cop	5½-6
No. 1 Cop	6
No. 1 Card	6½-7
No. 2 Card	4
No. 1 Oily Card	3-3½
No. 2 Oily Card	12½
Egyptian Card	7¼
Peeler Combing	8
Egyptian Combing	8
No. 1 Linters	3½-4½
No. 2 Linters	3-3½
White Clips	4-5
Colored Clips	2-2½
No. 1 Picker	1¾-2½

SHODDIES AND EXTRACTS.

White yarn, best all wool	38-40
White knit, all wool, best, fine	28-32
White knit, No. 2	25-28
Light yarn, extra fine	25-28
New pure indigo blue	23-25
Fine worsted, new black	26
New blue clip, best, fine	20-22
Dark mixed yarn, extra fine	22-24
All wool yarn, medium and coarse grades	15-20
Merino.	
Fine light, all wool, No. 1	24-25
Medium light, all wool, No. 1	16½-17½
Medium light, all wool, No. 2	14-16
Fine black, all wool	20-22
Fine dark, all wool, best grade	17-18
Medium dark, all wool, No. 1	13-15
Medium dark, all wool, No. 2	12-13
Red knit stock, strictly all wool	19-20
Red flannel, all wool	19-20
Dark blue for hosiery, strictly all wool, No. 1	17-20
Dark blue for hosiery, not all wool, No. 2	12-14

DELAINE EXTRACTS.

Light	17-19
Medium light	15-17
Regular gray	12-13
Black	14-15
Fancy colors	16-20

WOOLEN RAGS.

Fine merchant tailors, all colors	8-9
Choice light colors	12-14
Browns	12-13
Blacks	9-10
Fine blues, plain	10-11
Fine dark	10-11
Medium dark	6½-7½
Worsteds.	
Blue	15½-16½
Black	20
Serges.	
New blue	15-16
New black	15-16
Flannels.	
New scarlet	18½-22
New blue	17-18
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	6½-7
Old white flannels	17-18
White flannels, No. 2	11-12
Old red flannels	8½-9
Light blue flannels	6½-7½
Old blue flannels	6-7
Old plaids	5-7
White stockings	17-18
White hood stock	21-22
Clear hoods	7-8
Red stockings	7-8
Blue stockings	7-9
Fancy stockings, No. 1	7-9
Gray stockings	8-9
Black stockings	9-10
Knit stock comforters	7½-8½
Red knit	8½-9
Light gray knit	8-9
New light fancies	14-15
New fancies	11-12
Merinos.	
Light, fine	14-15
Light, coarse	7-8
Fine dark	9-10½
Dark, No. 2	5-6½
Coarse dark	4½-5
Blue	10-11
Blue—seamed	14-15
Black—unseamed	10-11
New black	18-20
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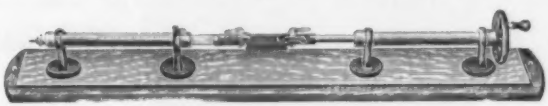

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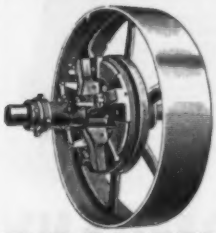

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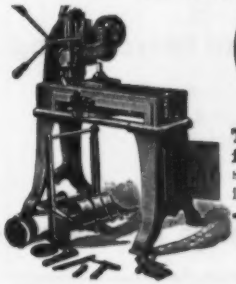

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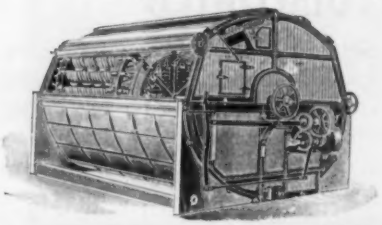

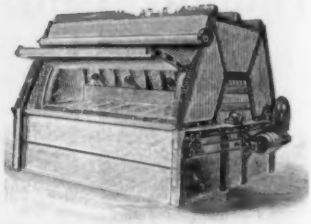

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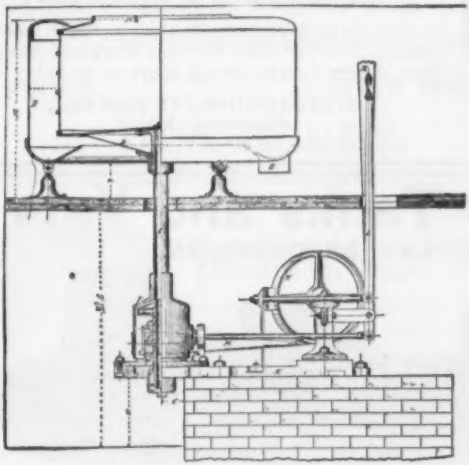

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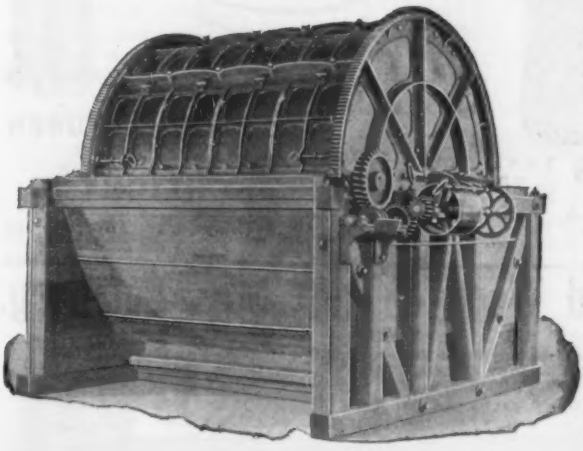

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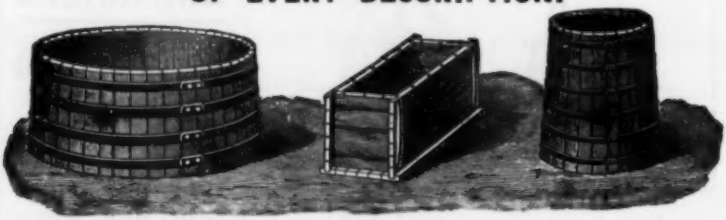

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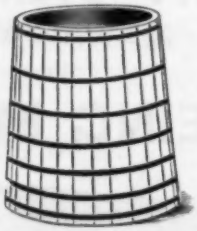

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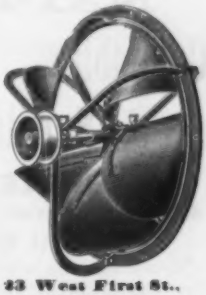

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Our system of Ventilating and Drying by air circulation will improve quality and increase production.

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Our work speaks for itself and this is what it has to say:
Cypress outlasts anything on earth that is built of wood. Born and reared in the water, Cypress is the natural element, when used for tanks. Decay shuns Cypress. **Cypress** does not warp, shrink or twist and when it goes through our shop, Cypress turns out the best tank construction and thought can build.

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We Build TANKS

OF ALL SIZES

Pine, Cedar, Cypress and Southern Pine
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Combining the latest American, French and English improvements.

Send for prices.

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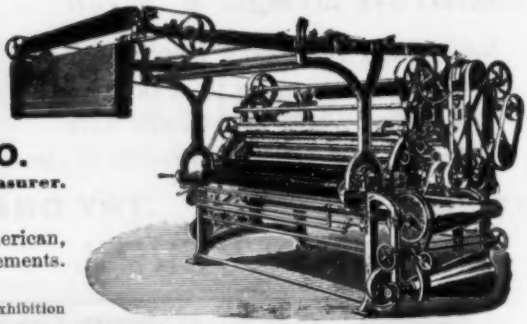

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FOR COTTON, WOOLEN, WORSTED, PLUSH GOODS, ETC.

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IMPORTANT IMPROVEMENT IN WORSTED SPINNING.

The Bamford Dust Proof and Self-Lubricating Spindle Tube saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, **and most important of all**, makes PERFECT YARN. Refer to largest worsted mills.

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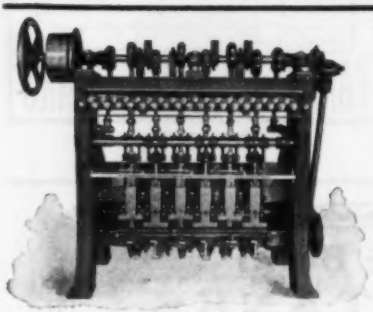
CAPS, FLYERS, TUBES, Etc., REPAIRED.



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L. F. FALES,

Manufacturer and Builder of

Multiple Needle Sewing Machines

For Sewing Carpet Linings, Horse Blankets, Wadding, etc.

These machines can be built with any required number of needles.

SPECIAL MACHINERY DESIGNED AND BUILT.

Telephone Connection.

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Sole Makers of the TORRANCE PATENT

Self-Acting Balling Machine

The attention of Woolen Manufacturers is invited to these Machines as convenient labor-saving appliances. The machine can be adjusted to make any size balls to suit lots, and the creel is constructed to carry twice the number of spools used by the old system.

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TENTERING AND DRYING MACHINES,

WITH LOW DOWN FEED.

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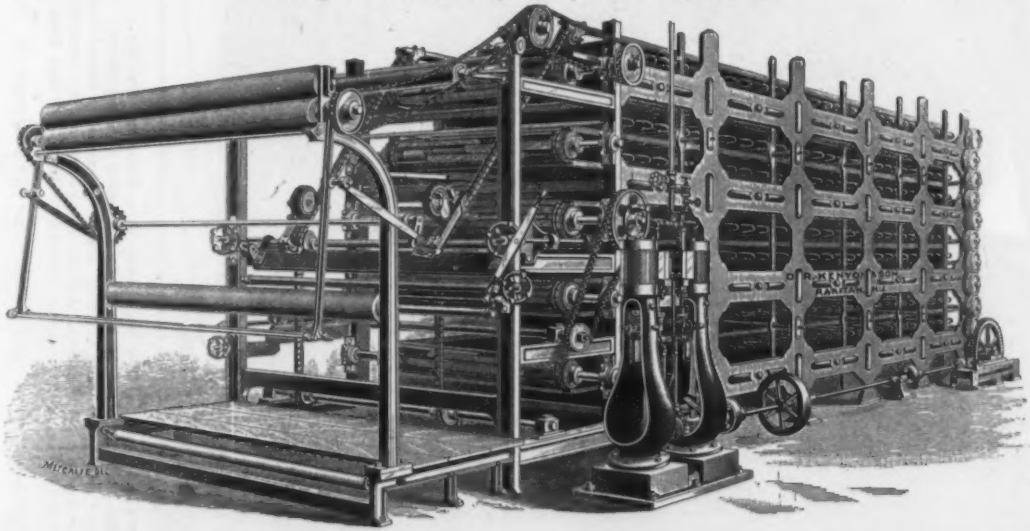
Hot Air Drying and Tentering Machines.



Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods.

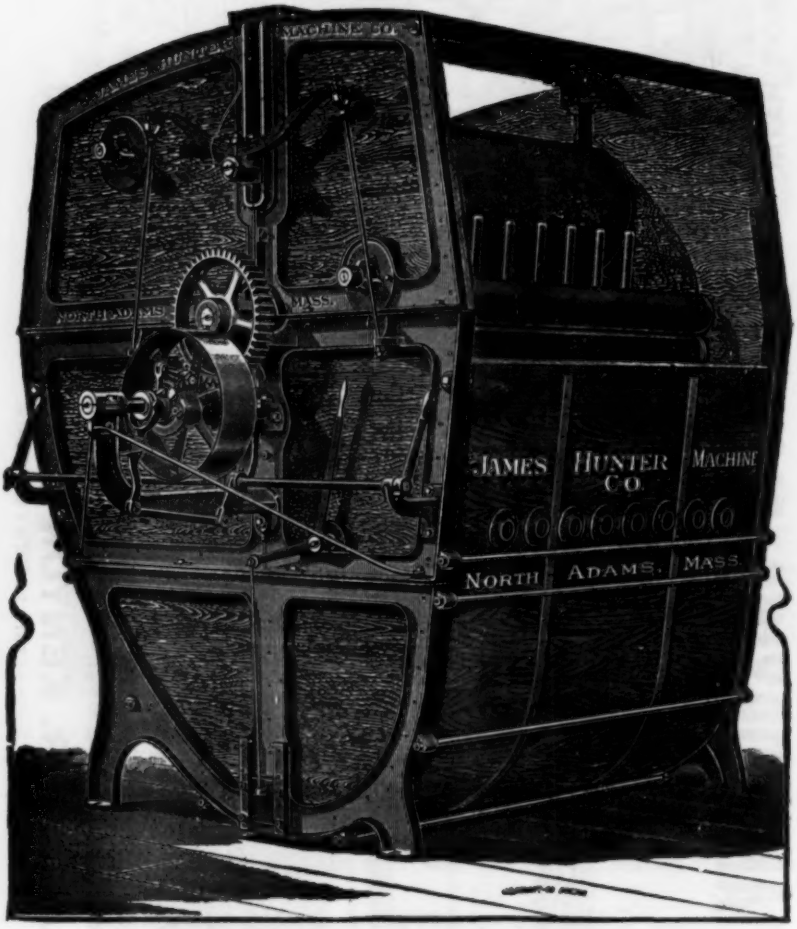
Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs (double or single,) Dewing Machines, etc.

Manufactured by D. R. KENYON & SON, Raritan, N. J.

Successors to KENYON BROS.

HUNTER'S IMPROVED CLOTH WASHER

For Four, Six and Eight Strings of Goods.



Power transmitted by means of a Friction Pulley.
No Shifting of Belt to start and stop the machine.
Less power required than for any other Washer of equal capacity.
All Main Bearings are adjustable. All Bearings are on the outside of frames.
No dripping of Oil on the Goods, or in the Wash Box.

Also Combination Washer and Fuller for Knit Goods in the String.

Write for further particulars and prices

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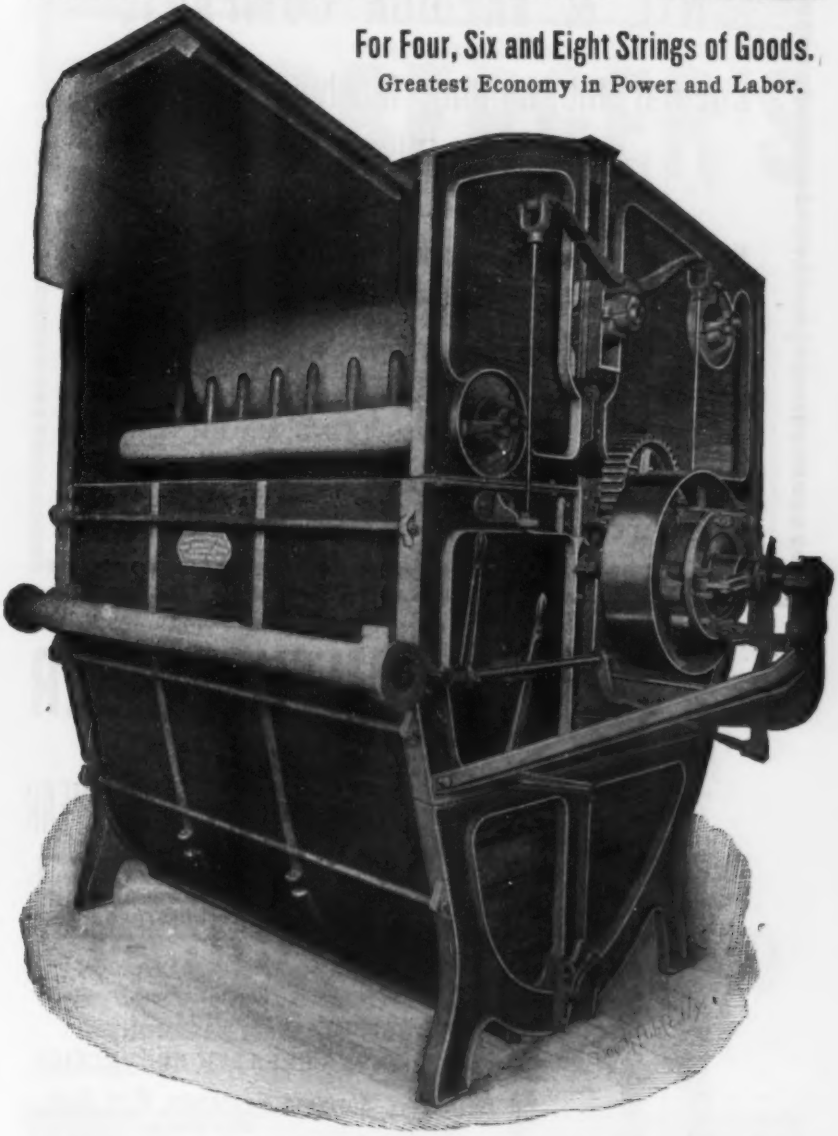
For Four, Six and Eight Strings of Goods.

Greatest Economy in Power and Labor.



Unequaled for Capacity and Rapid Washing

All Kinds of Heavy and Light Goods are Desired.

Attachment for Washing and Fulling Knit Goods in the String.

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Circular Rib Knitting Machinery,

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For Ladies' Vests, Combination Suits, Corset Covers, etc.
Men's Underwear, Sweaters, etc.

New Improved Sleeve Machines.

Machines for Rib Hosiery, Rib Tops and Cuffs.

LATEST IMPROVEMENTS ON ALL MACHINES.

MECHANICAL STOP MOTIONS
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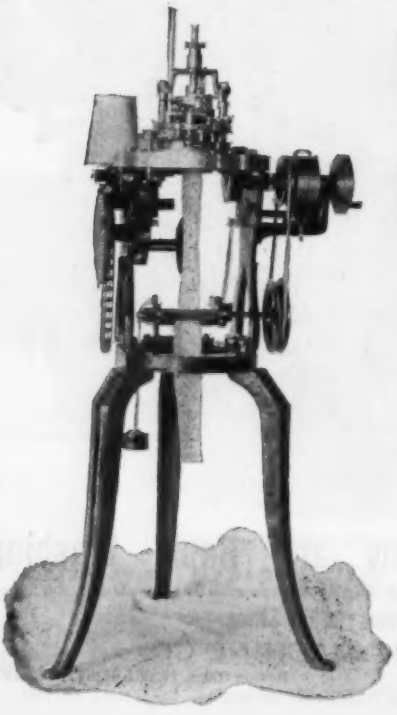

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For All Kinds of

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Entire New Design Ribber.
Protected by Patents
granted and others pending.

Excels in Quality of Fabric and Ease of Operation, Simplicity and Durability.

COSTS LESS MONEY.
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Absolute Guarantee With Each Machine.

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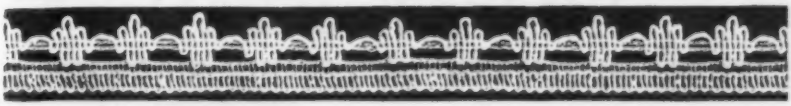

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SPRING LINES For 1903

HAVE CAUGHT THE TRADE!

No Wonder. They are

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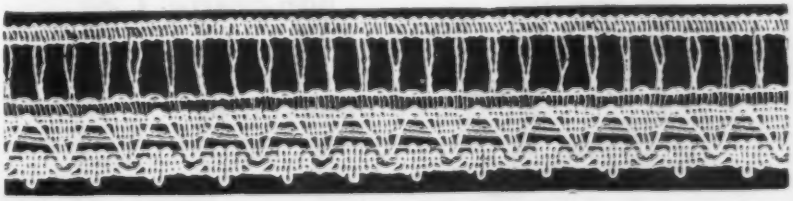

THE INVINCIBLE,
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For SEAMLESS Hosiery

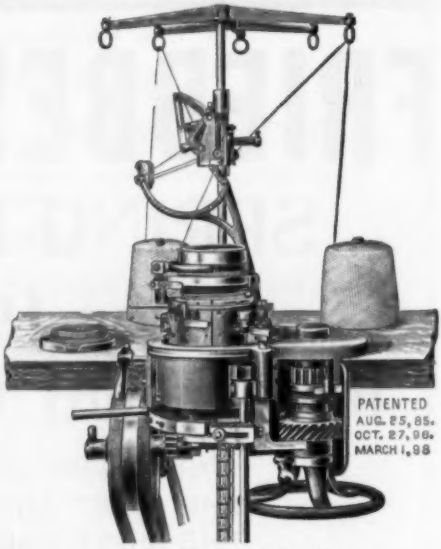
A BIG PRODUCER.

PRACTICAL AND ECONOMICAL IN OPERATION.

NO EXPERIENCE REQUIRED TO TRANSFER RIBBED TOPS BY THE INVINCIBLE METHOD.

A MACHINE OF THE HIGHEST GRADE.

Write for Catalogue.



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THE "NEW" VICTOR KNITTING MACHINE

A full Automatic Seamless Hosiery Machine.
Reinforcing Thread Automatically Inserted.
Thoroughly Interchangeable in all its parts.
Automatic Two-color Striping Attachment, also, Black-Leg White-Foot Attachment.

We have just bought out

A] NEW LACE MACHINE
For Hosiery.

American Knitting Machine Co.

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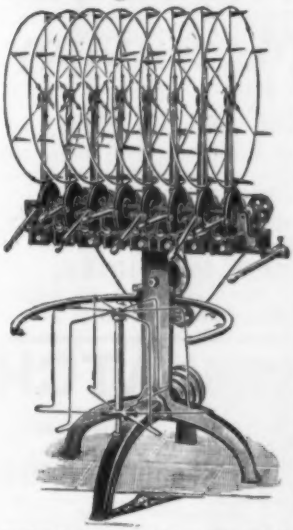
JAMES TAYLOR,

Knitting Machinery for Hosiery and Underwear



Back-winding Machine for winding the yarn from imperfect pieces back into skeins.

New and Second Hand.

SPECIALTIES IN NEW.

Sole Selling Agent for Stafford & Holt.

UNEXCELLED MACHINERY FOR RIBBED UNDERWEAR,

Sweaters, Bathing Suits, Toques and Specialties, with or without Automatic Stripers and Designers.

These machines have the **only absolutely perfect Take-up Device** Depends neither on springs, friction, ratchet, nor state of weather for its efficiency.

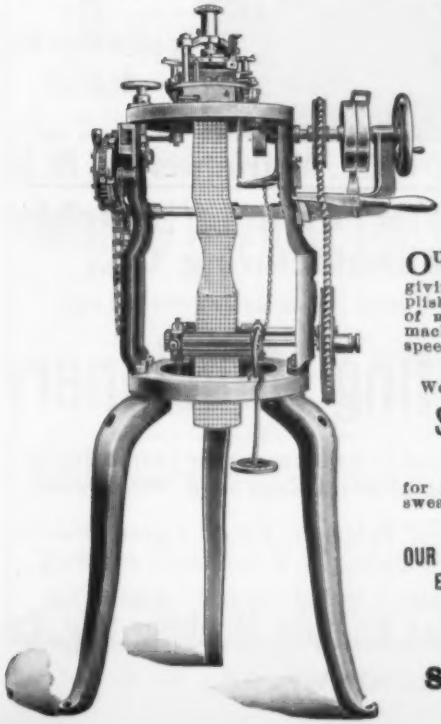
Builder of the **ONLY BACK-WINDING MACHINE** in the market. Ravels and backwinds all classes of Knit-Goods, including plated work and fabric made on 8-feed plain or tuck machines.

All inquiries and orders relating to the above machines should be addressed direct to me.

LARGE STOCK IN SECOND HAND.

Everything pertaining to the manufacture of all classes of Knit Goods, for example: Machines for Ribbed and Flat Underwear Hosiery, Sweaters, Jackets, Mittens, Gloves, Borders, Facing, and Gas Manties, Buttonhole and Button sewing Machines, Concealed Stitch Welters and Trimmers, Union Specials, Steam Presses, Winders, Ribbers, Sleevers, Loopers, Whizzers, Stop-motions, Cylinders and Dials, Needles, Pins in bulk, Brass Stamps, Stamping Ink,—in short, write us if you are in need of anything, or if you have any Machines for sale.

835 ARCH STREET, PHILADELPHIA, U. S. A.



HIGH SPEED RIB KNITTING MACHINERY.

OUR latest model machinery has been designed to run at **very high speed** giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

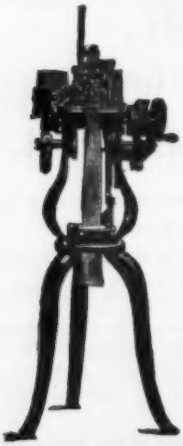
We also make special...

STRIPING AND DESIGNING MACHINES

for fancy golf stockings, bathing suits, sweaters, toques, toboggan caps, skirts, etc.

OUR MACHINERY ENABLES MANUFACTURERS TO "LEAD THE PROCESSION" INSTEAD OF STUMBLING ALONG WITH THE CROWD.

STAFFORD & HOLT,
LITTLE FALLS, N. Y.



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Successors to PEPPER MANUFACTURING CO.

MANUFACTURERS OF

KNITTING MACHINERY,

INCLUDING

Pepper's Flat Ribbed Cuff Machines,

Automatic Welt and Loose Course Machines for Stock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Short Cuffs, Sock Tops, Hose Legs, Wristers, etc.

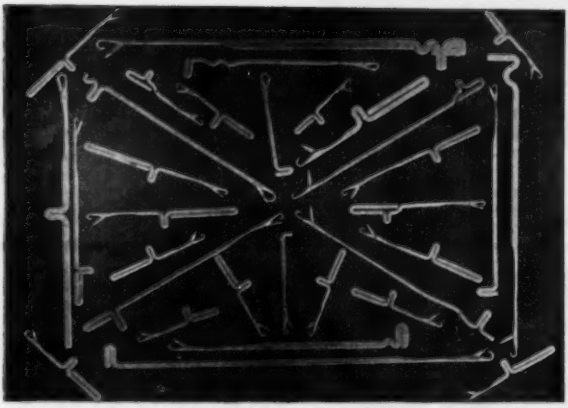
GOLF AND BICYCLE STOCKING MACHINES,

ALL KINDS OF

CIRCULAR RIBBED MACHINES,

For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins.

CORRESPONDENCE SOLICITED.



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Needles for all

Knitting Machines

OUR

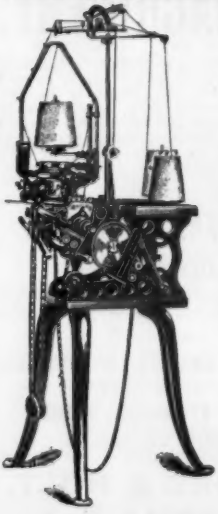
SUPERIOR

OR

Sunken Rivet Head Needles

will save you money every day in the year.

DODGE NEEDLE CO., Manchester, N.H.



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Two-Feed 7-8 Automatic for Ladies String Work, also Black Legs with White Feet.

Regular 7-8 Automatic for all classes of Cotton Hose. Special 3-4 Automatic for Wool.

Excelsior Knitting Machine Mfg. Co.

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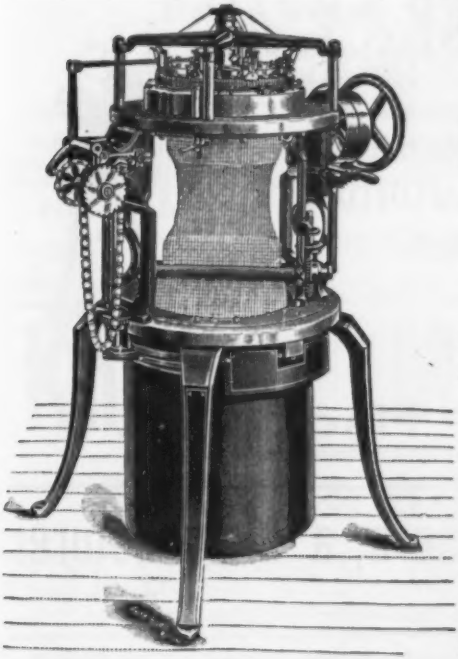

McMICHAEL & WILDMAN
MFG. CO.

RIB KNITTING MACHINERY,

AUTOMATIC AND PLAIN,

For all classes of Ribbed Hosiery and Underwear, Combination Suits Sweaters, etc.

ESTABLISHED REPUTATION FOR

Largest Production. Best Quality Fabric. Durability. Economy of Operation.

Full particulars, Description and Samples furnished upon Application to the

McMICHAEL & WILDMAN, MFG. CO.
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SOLE MANUFACTURERS AND AGENTS FOR U. S. A. FOR

Adams Rib and Top Cutting Machine

Cuts all Fabrics with or without Welts, False Welts cut out Automatically.

Requires no Trimming after passing through Machine. Solidity, Simplicity, Absolute Possitive Movements. Best Materials. Cutting and Working Parts Hardened Steel. Easy Running. Can be operated by Boy or Girl. Accidents impossible. 1,500 Dozen Cut Per Day by one Operator. No Special Attachments.

Full Automatic. Perfect. Clean. Saving of Labor and Goods.

Patented in the United States, Canada and Europe.

ADAMS TOP CUTTING MACHINE CO.

H. BRINTON & CO.,

213-215 Race Street,
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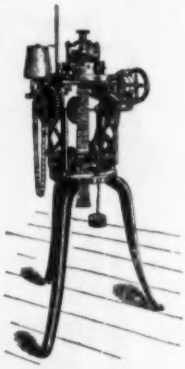
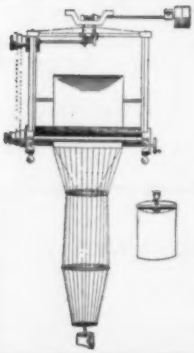
BUILDERS OF

Full Automatic Seamless and Ribbed



Knitting Machinery.



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of Tubular Goods that can afford to use any other than the Johnston Vertical Dryer? "It is the best, drying more goods, doing it better with less room than any other now made." These are the words of a superintendent of one of the largest plants in New York State. Six of these dryers equal eight horizontal. Both machines in operation in same mill side by side is what results prove.

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GAS ENGINES for city or country.
BRUSHING MACHINERY
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EFFICIENT
DURABLE
LOW IN PRICE.

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The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.

Blocks for Printing Hosiery.

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BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS. T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA.

PAXTON & O'NEILL'S
3-4 Automatic Knitter
FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

Exclusive rights to Brown's ATTACHMENTS FOR LACE EFFECT.

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Cylinders and Dials for all size machines.

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506 N. American St., PHILADELPHIA, PA., **Pioneer Builders of**

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FOR SEAMLESS HOSIERY.

Estimates for Plants Complete.

Write for information and catalogue.

KENNEDY'S KORRECT KUTTERS
THE VERY BEST

For Bands, Stays and Facings,
Suspender Straps, Gussets,
Drawer Bands,
Pockets, Shields, etc.

THOS. KENNEDY, Cohoes, N. Y.

Our New Improved Light-Running Short Carriage

KNITTING MACHINE

unsurpassed for full-fashioned Sweaters, Jackets, Leggins, regular Knit Underwear, Union Suits, and all other *regular* and *selvage* Knit Garments. Made with 2 complete yarn-carriers and 2 color striping attachment and has the new combined Sweater Stitch Drop Lock and Tubular Lock. Special Glove Machines. Finger Knitting Machines 3 inches width of needle bed. Rapid 2-thread Lock stitch Overseamers.

ARTHUR MUELLER,
780 Madison St. cor Patchen Ave., Br'lyn, N.Y.

TRADE MARK.

WILLCOX & GIBBS

"OVERLOCK" MACHINE.

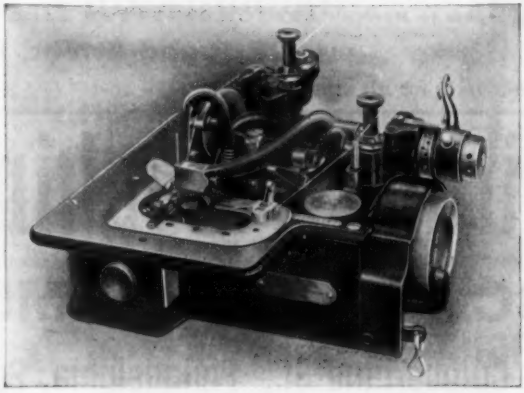
(TRADE MARK.) (Pat. Apr. 5, 1892.)
(Patent twice upheld by U. S. Court of Appeals.)

Business est. in 1859.

For TRIMMING, SEAMING, and OVEREDGING (or HEMMING) KNIT UNDERWEAR.

3,000 STITCHES PER MINUTE

12 to 20 STITCHES PER INCH

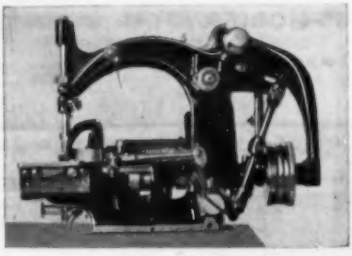


The "Overlock" Elastic Stitch is equal to the full stretch of the Goods

WILLCOX & GIBBS SEWING MACHINE CO.,
658 BROADWAY, NEW YORK CITY.
LONDON PARIS MILAN DRESDEN

THE ARNOLD SEWING MACHINE CO.

216 High Street, Newark, New Jersey.



Overedge Welting Machine, with Trimmer.
The very best in the market.
(No royalty.)

Overedge Seaming Machine, with Trimmer.
3000 stitches per minute.
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Overedge Sewing Machine, without Trimmer.
For manufacturers of knit goods and other fabrics, with or without trimmers.

Our claims are SIMPLICITY,
DURABILITY,
ACCESSIBILITY,
Every part of our machine being readily accessible.
This machine has 100 less parts than any other overedge machine.

THE CHEAPEST AND BEST METHOD

—: OF :—

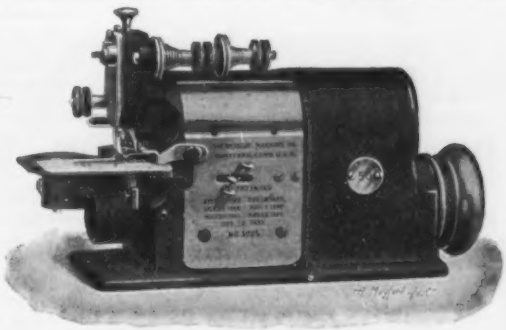
FINISHING RIBBED KNIT GOODS

IS BY THE USE OF

Our High Speed Machines.

Blankets, Skirts or Cotton Goods,

requiring a useful and Ornamental Finish, should be finished by some of our various machines adapted for special purposes and finishes.



Send for Catalogue and Samples, stating the kind of goods to be finished.

THE MERROW MACHINE CO.,

346 Broadway, New York. **Hartford, Conn.** Bourse Building, Philadelphia.

Single "Interlock" Machine

(Trade Mark.)

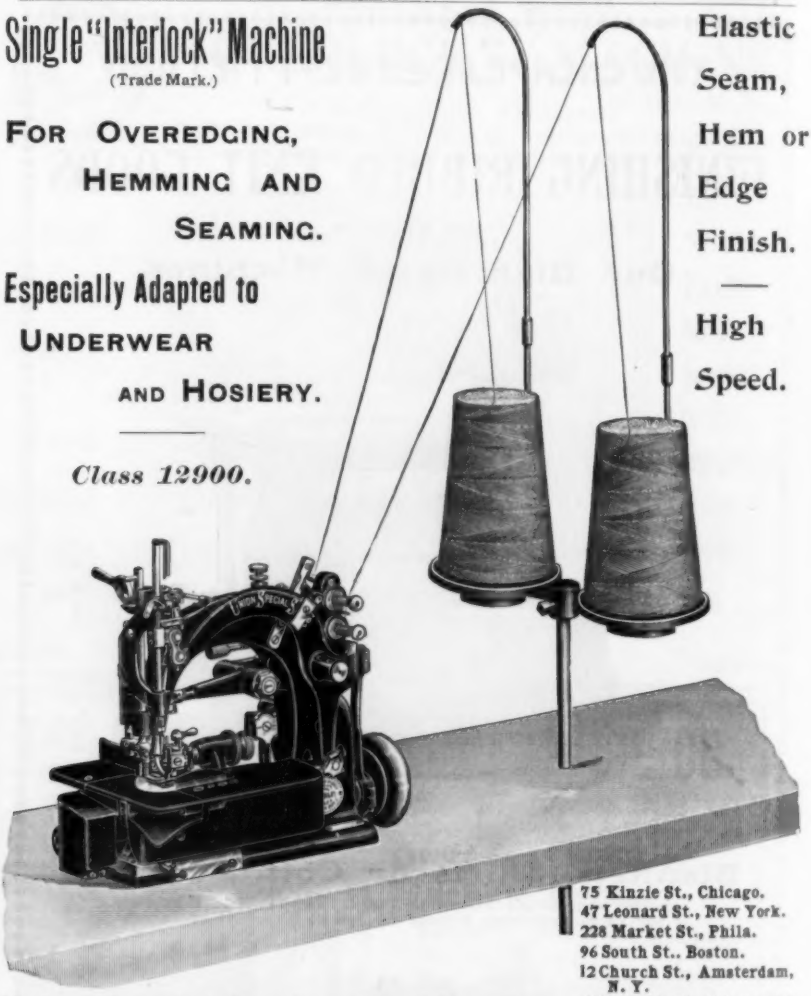
FOR OVEREDGING, HEMMING AND SEAMING.

Especially Adapted to UNDERWEAR AND HOSIERY.

Class 12900.

Elastic Seam, Hem or Edge Finish.

High Speed.



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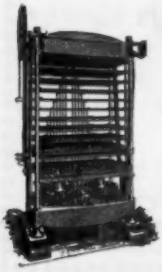

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Trimmers put on all Makes of Machines.

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FOR UNION BUTTON SEWING MACHINES.

The new Thread Trimming Device trims both upper and lower threads, leaves the stitching on top of the button with a smooth finish, without any ragged ends, secures the ends of both threads, makes next stitch perfect.

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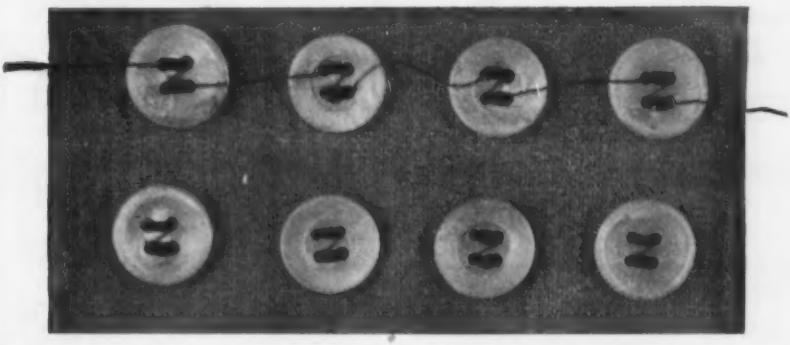

Upper row shows buttons sewed on by Union Machine *without* the Thread Trimming Device. Lower row shows buttons sewed on by Union Machine with Thread Trimming Device attached.

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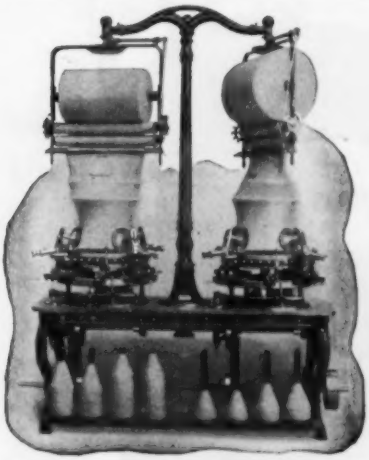

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RIB KNITTING MACHINERY FOR

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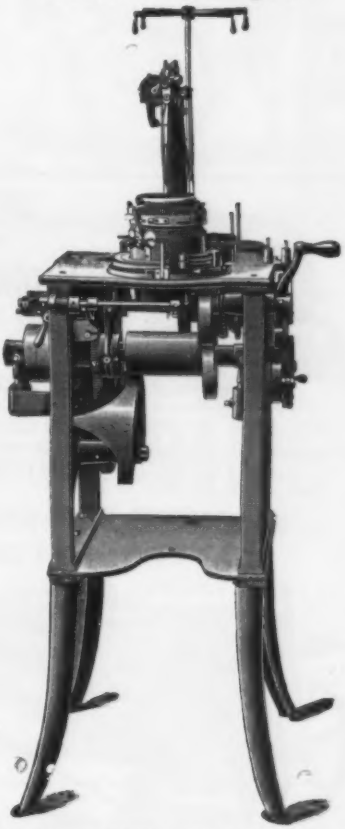

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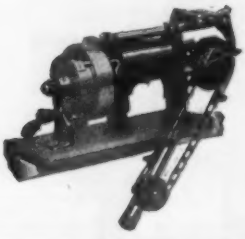

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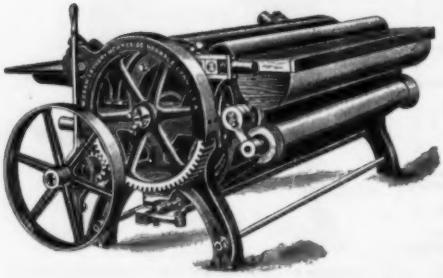

This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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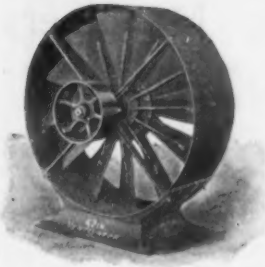

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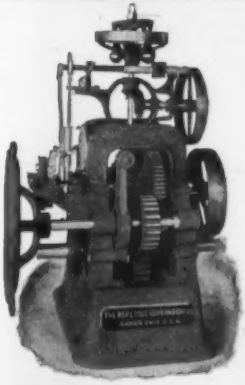

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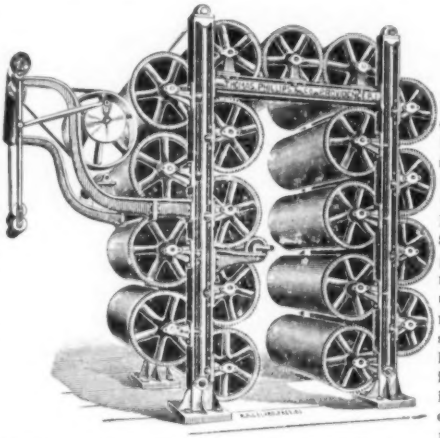

Phillips Upright Drying Machine.

The cut shows a 19-can machine with two tiers with intermediate can for continuous drying. We build any arrangement of stringing and furnish any desired number of cans, of any length, either with Phillips Steel Head or Cast Iron. We strongly advise our Steel Head Can. It is a big improvement as eight years' experience has demonstrated. This upright machine enables cloth to run without wide intermediate spaces between the tiers, as in horizontal machine, thus avoiding "scrimps." We also build Horizontal Frames, but on radically different principles from most others. Our illustrated catalogue explains all these points at length and has many plates showing different styles of stringing. It may be had for the asking.

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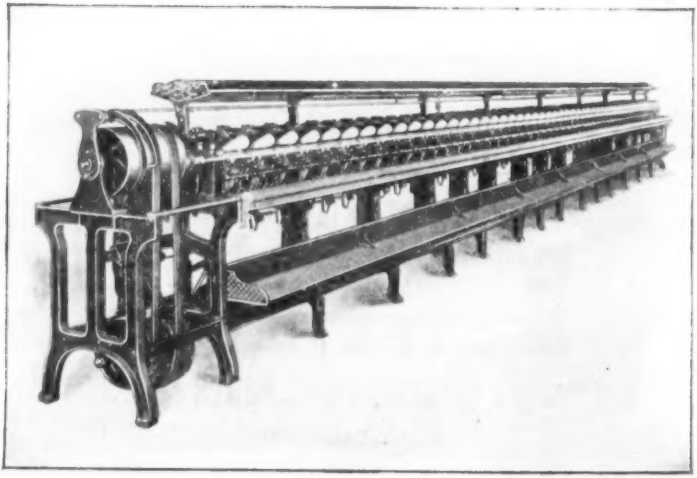

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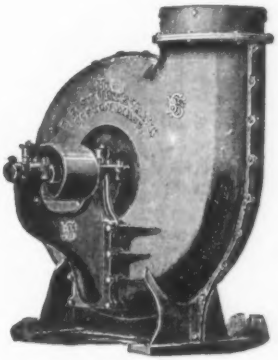

Cleans the Stock in the Opening Process. Reduces time of drying by one-half as result of handling from picker or dyehouse to dry-room, and leaves it in better condition for carding.

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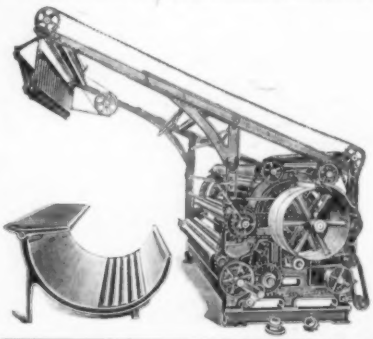

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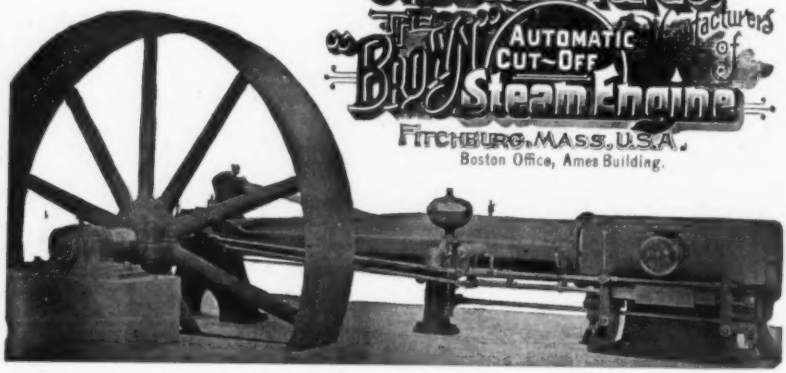

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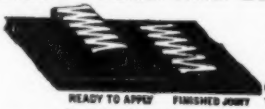

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